CALIFORNIA
High-Speed Rail Authority

June 16, 2017

The Honorable Holly Mitchell, Chair
Joint Legislative Budget Committee
Legislative Office Building
1020 N Street, Room 553
Sacramento, CA 95818

Dear Senator Mitchell:

The California High-Speed Rail Authority (Authority) is pleased to submit to you the enclosed Rosecrans/Marquardt Grade Separation Project Funding Plan, and corresponding Independent Consultant Reports required pursuant to Section 2704.08(d) of the Streets and Highways Code. The Funding Plan and Consultant Report were approved by the Authority Board on June 14, 2017. The existing Rosecrans/Marquardt crossing is an at-grade, diagonal rail crossing located at the intersection of Rosecrans Avenue and Marquardt Avenue in the City of Santa Fe Springs in Los Angeles County. This location is on the Los Angeles to Anaheim high-speed rail segment.

In its 2012 Business Plan, the Authority adopted a blended approach that included making early investments in Southern California to upgrade existing rail services, build ridership, and prepare for future high-speed rail service. In turn, the Authority entered a Memorandum of Understanding (2012 MOU) with Southern California transportation agencies and metropolitan planning organizations to create a program of early investment projects in Southern California that would provide near-term passenger rail improvements while also providing necessary components of the high-speed rail system. In July 2012, through SB 1029, the Legislature appropriated $500 million in Proposition 1A funds to support construction of 2012 MOU early investment projects.

The Authority has worked with the 2012 MOU signatories to prioritize and advance identified projects. The Rosecrans/Marquardt Grade Separation Project is the first early investment project ready for construction to be funded ($76.665 million) out of the Legislature's $500 million appropriation. The California Public Utilities Commission has rated this intersection as the most hazardous grade crossing in the State of California. The rail corridor through this grade crossing has both major freight operations by BNSF Railway as well as commuter and intercity rail services by both Amtrak and Metrolink. The crossing is traversed by about 110 freight and passenger trains and over 52,000 vehicles per 24-hour period. In addition to the heavy rail and auto traffic, the intersection is traversed by pedestrians. There have been approximately 25 accidents at the crossing over the last 10 to 15 years, including several injuries and fatalities.

The current grade crossing also creates significant environmental impacts. With the crossing arms down a combined 21 hours, or almost one full day, each week, the existing crossing creates roughly 45 days per year of idling cars waiting for trains to pass and releasing significant amounts of harmful emissions.

The Rosecrans/Marquardt Project will separate vehicle traffic from the rail traffic by constructing an elevated roadway overpass structure which will greatly improve safety, eliminate delays and improve environmental quality. Additionally, this project is the last component necessary to complete the Triple Track project, which has been a multi-decade effort led by the California Department of Transportation, in collaboration with local partners, to build out 15 miles of a third main track between Los Angeles and Fullerton. Completion of the Triple Track project will enable 32 more passenger rail trains to operate daily in the corridor while also providing substantial benefits to freight operations. This will result in major benefits for the Southern California rail system, approximately doubling capacity for rail service to the Inland Empire and increasing capacity to Orange County and San Diego by about 50%.

Helping fund the Rosecrans/Marquardt Grade Separation Project will provide significant near-term safety benefits, eliminate gate down time, add capacity for existing freight and passenger rail services, increase ridership on existing rail services, and prepare the corridor for future high-speed rail service between Los Angeles (and points north) and Anaheim. It is designed and will be constructed to accommodate high-speed service, and is necessary for such service.

In order to expend Proposition 1A bond funds, the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century requires the Legislature to appropriate Proposition 1A funds (as it did in 2012), and for the Authority to prepare and submit a Funding Plan and associated Independent Consultant Report to the Director of Finance and the Chair of the Joint Legislative Budget Committee. The enclosed documents are consistent with the Authority's 2016 Business Plan and the Legislature's appropriation and direction in SB 1029.

If you have any questions, please contact Barbara Rooney, Deputy Director of Legislation, at Barbara.Rooney@hsr.ca.gov, or (916) 330-5636.

Sincerely,

THOMAS FELLENZ
Interim Chief Executive Officer

Attachment(s)

cc: Members, Joint Legislative Budget Committee
Mr. Mac Taylor, Legislative Analyst
Mr. Mark Ibele, Staff Director, Senate Budget Committee
Mr. Kirk Feely, Budget Fiscal Director, Senate Republican Fiscal Office
Mr. Craig Cornett, Senate President Pro Tempore's Office
Mr. Christian Griffith, Chief Consultant, Assembly Budget Office
Mr. Steve McCarthy, Staff Director, Assembly Republican Fiscal Committee
Mr. Seren Taylor, Director of Strategic Policy, Assembly Republican Leader's Office
Mr. Jim Richardson, Policy and Fiscal Director, Assembly Republican Leader's Office
Mr. Chris Woods, Assembly Speaker's Office

CALIFORNIA
High-Speed Rail Authority

Los Angeles to Anaheim Usable Segment

Incremental Capital Investment (#1)

Rosecrans/Marquardt Grade Separation Project Funding Plan

Final – June 16, 2017

www.hsr.ca.gov

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Acronyms and Abbreviations

Authority	California High-Speed Rail Authority
BNSF	Burlington Northern Santa Fe Railway Company
CTC	California Transportation Commission
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
C&M	Construction and Maintenance
CPUC	California Public Utilities Commission
CTC	California Transportation Commission
EA	Environmental Assessment
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
FAST	Fixing America's Surface Transportation
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GO	General Obligation
ITIP	Interregional Transportation Improvement Program
JPA	Joint Powers Authority
LAUS	Los Angeles Union Station
LOSSAN	Los Angeles – San Diego – San Luis Obispo Rail Corridor
Metro	Los Angeles County Metropolitan Transportation Authority
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act
NHFN	National Highway Freight Network
NHFP	National Highway Freight Program
PMFA	Project Management and Funding Agreement
Prop 1A	Proposition 1A, also known as the "Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century"
PS&E	Plans, Specifications, and Estimates

ROD	Record of Decision
SAA	Supplemental Alternatives Analysis
SB	Senate Bill
SCAG	Southern California Association of Governments
SCC	Standard Cost Categories
SCRRA	Southern California Regional Rail Authority
S&H Code	Streets and Highways Code
STIP	State Transportation Improvement Program
STO	State Treasurer's Office
TCRP	Transit Cooperative Research Program
TIGER	Transportation Investment Generating Economic Recovery
US DOT	U.S. Department of Transportation
YOE	Year of Expenditure

Glossary of Key Defined Terms

California High Speed Rail Program Phase 1 ("Phase 1")	The corridor of the high-speed rail system from Los Angeles and Anaheim to San Francisco, including the blended system in Northern California between San Francisco and San Jose and in Southern California between Burbank, Los Angeles and Anaheim.
California High Speed Rail Program Silicon Valley to Central Valley Line ("Valley to Valley Line")	As defined in the 2016 Business Plan, the section of the California High-Speed Rail System that runs from San Jose Diridon Station in the north to just north of Bakersfield.
Funding Plan	The plan prepared by the Authority herewith to meet the requirements of Streets and Highways Code (S&H Code) section 2704.08, subdivision (d), specifically part (1) for the Usable Segment that is the subject of this Funding Plan.
Proposition 1A (Prop 1A) or the Bond Act	The "Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century," approved by voters in November 2008. The Bond Act authorizes $9.95 billion in general obligation bonds to pay for the capital costs of the high-speed rail system and improvements to regional services which will connect to the system. The Bond Act is codified in S&H Code section 2704 et seq.
SB 1029	Senate Bill (SB) 1029, passed by the California State Legislature and signed by Governor Brown in July 2012, appropriates Prop 1A funding, including for projects in Southern California. The appropriation includes the Prop 1A funds that are the subject of this Funding Plan.
Southern California Memorandum of Understanding ("SoCal MOU")	Memorandum of Understanding (MOU) between the Authority and Southern California partner agencies to advance statewide rail modernization by investing in local rail systems that relate to the statewide high-speed rail system. SB 1029 explicitly cites to the SoCal MOU as the basis for its appropriations to the projects in Southern California that the MOU lists.

Introduction

Proposition 1A, the "Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century" (the Bond Act) was approved by voters in November 2008. The Bond Act authorizes $9.95 billion in general obligation (GO) bonds to pay for the capital costs of the high-speed rail system and improvements to regional services which will connect to the system. The Bond Act is codified in Streets and Highways Code Section (S&H) 2704 et seq. S&H 2704.08, subdivision (d) requires that, prior to committing any proceeds of bonds described in paragraph (1) of subdivision (b) of Section 2704.04 for expenditure for construction and real property and equipment acquisition on each corridor, or usable segment thereof, other than for costs described in subdivision (g), the authority shall have approved and concurrently submitted to the Director of Finance and the Chairperson of the Joint Legislative Budget Committee the following: (1) a detailed funding plan for that corridor or usable segment thereof...(as further described herein); and (2) a report or reports prepared by one or more financial services firms, financial consulting firms, or other consultants, independent of any parties, other than the authority, involved in funding or constructing the high-speed train system, making certain indications.

Introduction

The California High-Speed Rail Authority (Authority) has prepared this S&H Code section 2704.08, subdivision (d) Funding Plan (Funding Plan) for the first capital investment - a necessary grade separation - in the Los Angeles to Anaheim Usable Segment. **Exhibit 1** shows this Usable Segment in the context of the planned statewide system. The grade separation is at the intersection of Rosecrans Avenue, Marquardt Avenue and the existing rail corridor, in the City of Santa Fe Springs (Rosecrans/Marquardt Project or Project). **Exhibit A-1** shows the Project location.

Following programmatic environmental clearance in 2005, the Authority and its federal partner, the Federal Railroad Administration (FRA), selected the existing rail corridor between Los Angeles and Anaheim as the preferred program alignment. That clearance is for shared operations in the corridor – i.e., existing passenger and freight trains sharing the corridor with high-speed trains.

The corridor is one of the busiest rail corridors in the country, with projections of significant growth in freight and passenger train volumes, even without the addition of high-speed trains. Given the volumes, adding high-speed trains will require the addition of tracks in certain areas, including at the Rosecrans/Marquardt intersection. Additional tracks are necessary to create train volume capacity. However, this at-grade crossing under current conditions is already the highest priority crossing in the entire state needing separation to increase safety, according to the California Public Utilities Commission (CPUC). The CPUC almost certainly will not approve the addition of tracks and the

associated future increased train volumes without grade separating it approximately concurrently.[1] Accordingly, a grade separation at this location is necessary for high-speed train operations between Los Angeles and Anaheim.

The Rosecrans/Marquardt Project is explicitly included in the list of projects contained in the Southern California Memorandum of Understanding (SoCal MOU). In 2012, the Legislature in Senate Bill 1029 (SB 1029) appropriated $500 million in Proposition 1A (Prop 1A) funds for those projects.

Accordingly, this Funding Plan was prepared pursuant to provisions of Prop 1A, contained in S&H Code section 2704.08, subdivision (d). The Funding Plan relates to the commitment of Prop 1A bond proceeds in the amount of $76.665 million of the total $155.3 million cost of the Project for expenditure for construction activities and real property acquisition. To invest the funds, this Funding Plan is required.

Exhibit 1: High Speed Rail System

Source: 2016 Business Plan, Exhibit 4.1, page 48; California High-Speed Rail Authority, May 2016.

The investments directed by the Legislature in SB 1029 are an essential aspect of the Authority's Business Plan, as part of the necessary foundations for future high-speed rail service. At the same time, these funds will provide a significant benefit in the near term by strengthening and improving existing

[1] See Protest of the CPUC Safety and Enforcement Division, filed March 8, 2017, in CPUC proceeding A.17-03-005, in which BNSF seeks CPUC permission to add a third track, potentially prior to completion of the grade separation.

rail networks. The Business Plan incorporates a blended system approach that will provide high-speed rail service and modernized commuter/regional rail service in shared corridors and on shared tracks, both in Northern California (between San Francisco and San Jose) and in Southern California (between Burbank, Los Angeles, and Anaheim). This approach minimizes impacts on surrounding communities, reduces project cost, improves safety (by eliminating a dangerous at-grade crossing, as in this case) and expedites implementation. In short, investments such as the Rosecrans/Marquardt Project are necessary for high-speed rail service, and doing them early reduces project costs and provides significant benefits to local and regional services.

The Authority is working closely with partner agencies in Southern California to accelerate these early investment projects, which will be completed incrementally and provide significant near-term improvements. These projects will initiate phased implementation for high-speed rail service, consistent with the blended system approach. The Rosecrans/Marquardt Project is the first of these Southern California projects to be ready for implementation. The Authority's plans follow the Legislature's direction in beginning the process of developing the necessary elements of the high-speed rail system in Southern California, in conjunction with local projects and other state funded projects. The Rosecrans/Marquardt Project will provide immediate benefits for existing passenger rail services. Following completion of additional planned investments, high-speed trains will operate in the shared corridor.

Detail Regarding the Rosecrans/Marquardt Grade Separation

The Rosecrans/Marquardt Project is an important Southern California early investment project that is also necessary for future high-speed rail service. The existing Rosecrans/Marquardt crossing is an at-grade, diagonal rail crossing located at the intersection of Rosecrans Avenue and Marquardt Avenue with the BNSF mainline railroad tracks (and the future high-speed rail corridor), within the City of Santa Fe Springs in Los Angeles County. The California Public Utilities Commission (CPUC) has rated this grade crossing as the State's number one priority for grade separation.

The rail tracks that cross Rosecrans Avenue and Marquardt Avenue (i.e., that will be grade separated after completion of the Rosecrans/Marquardt Project) are part of an existing corridor between San Luis Obispo/Los Angeles/San Diego known as the "LOSSAN" corridor. This LOSSAN corridor is a 351-mile passenger rail route that extends south from San Luis Obispo through Santa Barbara and Ventura counties to downtown Los Angeles and on to Orange and San Diego counties. Pacific Surfliner service, operated by Amtrak on behalf of the LOSSAN Joint Powers Authority, and the Southern California Regional Rail Authority's (SCRRA or Metrolink) commuter rail services operate passenger trains on the Los Angeles to Anaheim Segment of the LOSSAN corridor. The LOSSAN corridor service includes 41 stations and more than 150 daily passenger trains, with an annual ridership of nearly 3 million on Amtrak Pacific Surfliner intercity trains and more than 3 million in the corridor on Metrolink commuter trains.

These tracks are also part of the BNSF East-West freight rail corridor that connects the Alameda Corridor railway with the rest of the nationwide freight rail network. The Alameda Corridor, which opened in 2002, is a 20-mile express freight rail line that facilitates cargo movements to and from the Ports of Los Angeles and Long Beach, the nation's two busiest ports based on container traffic.

In short, the existing Rosecrans/Marquardt crossing contains rail tracks that are common to both a heavily-used passenger corridor (LOSSAN) and a heavily-used freight corridor (connecting the Alameda Corridor with destinations inland). As a result, over 130 daily one way trips by train combined with heavy vehicle traffic (over 52,000 vehicles on a weekday) cause about 21 hours of cumulative gate downtime per week.

The Rosecrans/Marquardt Project is also the last grade separation necessary before increased benefits for freight and passenger rail services can be realized from the Triple Track project. The Triple Track project, being led by the California Department of Transportation (Caltrans) in cooperation with BNSF Railway and the cities located in southeastern Los Angeles County (the Gateway Cities), has worked to add 15 miles of a third mainline track between Los Angeles and Fullerton. The objective of the Triple Track project is to allow for increased capacity in LOSSAN intercity and regional rail service while also increasing the efficiency of the BNSF corridor for freight rail service. To date, over $150 million has been invested in track and signal construction on the Triple Track project, including nearly $130 million from the State of California and $28million from a federal American Recovery and Reinvestment Act of 2009 grant. The State has also invested over $110 million to construct two additional grade separations located at Valley View Avenue and Passons Boulevard, which are within the corridor.

The completion of the Triple Track project will allow for up to 32 additional daily passenger rail slots that will improve mobility throughout the LOSSAN corridor (i.e., will enable 32 more passenger rail trains to operate daily in the corridor). These slots are essential to relieve congestion on the existing corridor and, with further improvements, to allow for the additional volumes from high-speed trains running in the corridor. Other grade separations elsewhere along the LOSSAN corridor will be made over time.

The Rosecrans/Marquardt Project is necessary for high-speed rail to operate in the Los Angeles to Anaheim Segment, and therefore is an essential component of the high-speed rail system. The Authority completed a Supplemental Alternatives Analysis (SAA) Report for the Los Angeles to Anaheim Segment in April 2016, which recommended alternatives to advance for analysis in the Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS). All of the potential high-speed rail alternatives currently under consideration as a result of that SAA will pass through this intersection and all involve the addition of tracks (to handle the increased train volume). The addition of track, in turn, requires the completion of the Rosecrans/Marquardt Project, as noted previously.

As part of the Phase 1 high-speed rail system, the Authority will run high-speed rail service in this segment, along with BNSF freight rail, Amtrak passenger rail, and Metrolink passenger rail services. With the addition of high-speed rail, as well as increased train volumes for existing operators, the number of daily train trips that will traverse the segment is projected to nearly double from current conditions by

the year 2029. Completion of the Rosecrans/Marquardt Project will allow the high-speed rail system and other passenger rail operators to safely meet the capacity demands of significantly higher future passenger train volumes, and will increase current safety in the surrounding area.

The Rosecrans/Marquardt Project will construct an indispensable building block for the future high-speed rail system between Los Angeles and Anaheim, while also:

- Improving safety by separating pedestrians and vehicles from trains at the railroad crossing.
- Enhancing mobility and quality of life for the community.
- Enhancing the efficiency of existing and future rail system needs.
- Minimizing disruption to residents, businesses, and community during construction.

Project Stakeholders

Several partners are coordinating on a regular basis to implement the Rosecrans/Marquardt Project. The principal agencies are summarized below.

Los Angeles County Metropolitan Transportation Authority (Metro): Metro plans, designs, and constructs multimodal transportation projects in Los Angeles County, and also operates the county's largest transit system. Metro is leading delivery of the Rosecrans/Marquardt Project through the planning, environmental, design, and construction phases.

California High Speed Rail Authority (Authority): The Authority is planning, designing, and building a new high-speed rail system in California. The Authority has started construction of the system in the Central Valley and is currently working with partner agencies, corridor cities, stakeholders, and community members to environmentally clear all remaining project sections of the Phase 1 high-speed rail system, which includes four segments in Southern California. The Rosecrans/Marquardt Project is located in the Los Angeles to Anaheim Segment.

City of Santa Fe Springs: The Rosecrans/Marquardt Project lies within the limits of the City of Santa Fe Springs. The city is located in Los Angeles County approximately 15 miles south-east of downtown Los Angeles. It is located in a heavy industrial zone with over 80% of the city zoned for retail, office, light commercial, or heavy commercial. The city has been a key partner in the development of the Rosecrans/Marquardt Project and has also been a major participant throughout the construction of the entire Triple Track project.

California Department of Transportation (Caltrans): The State has directly supported intercity passenger rail services since 1976. Currently Caltrans provides financial support for the three intercity passenger routes in California. Caltrans works directly with the Class I railroads in California (BNSF Railway and Union Pacific Railroad) to fund and oversee engineering, construction, and capitalized maintenance of rail infrastructure improvements on the *Pacific Surfliner*, the *San Joaquin* and the *Capitol* Corridors. Further, it procures rolling stock (locomotives and passenger cars) in support of all three corridors for the benefit of California's intercity rail passengers.

LOSSAN Agency: The LOSSAN Agency is a joint powers authority (JPA) that is governed by an 11-member Board of Directors composed of elected officials representing rail owners, operators and planning agencies along the rail corridor. As of July 2015, LOSSAN has been responsible for the day to day operations of the Pacific Surfliner service, which travels throughout six counties from San Luis Obispo to San Diego.

California Public Utilities Commission (CPUC): The CPUC regulates electric, natural gas, water, telecommunications, railroad, rail transit, and passenger transportation companies in California. The CPUC's role in the Rosecrans/Marquardt Project is to provide oversight, guidance, funding, and authorization for construction of the grade separation.

BNSF: BNSF operates roughly a 2,000-mile freight rail network in California, and owns the railroad right-of-way where the Rosecrans/Marquardt Project is located. BNSF will approve the design and construction methods for the Project, as relates to their concerns.

Capital Cost and Funding Requirements

The total capital cost of the Rosecrans/Marquardt Project is projected to be $155.3 million in year of expenditure dollars (YOE$) and $138.0 million in year 2016 dollars (2016$).

Organization of the Funding Plan

This Funding Plan is organized consistent with the requirements of S&H Code section 2704.08, subdivision (d).

Section A: The Usable Segment – This section defines the Los Angeles to Anaheim Segment, on which the Rosecrans/Marquardt Project is located, as the Usable Segment for this Funding Plan.

Section B: Sources of Funds and Anticipated Time of Receipt – This section of the Funding Plan describes the sources of funds to be used for the construction and acquisition activities of the Rosecrans/Marquardt Project.

Section C: Projected Ridership and Operating Revenue – This section describes current and projected passenger ridership over the Usable Segment for the existing rail services and provides the Authority's ridership estimates for the corridor once its service begins.

Section D: Projected Construction Cost – This section describes the construction and acquisition cost estimates, including cost escalation and reserves for contingencies, for the Rosecrans/Marquardt Project.

Section E: **Material Changes** – Because the Legislature made the appropriation for projects in Southern California without a separate subdivision (c) Funding Plan, there are no material changes to report.

Section F: Terms and Conditions of Agreements – This section describes the terms and conditions of the agreements that the Authority has entered or plans to enter into with regard to the completion of the Rosecrans/Marquardt Project as well as other key agreements to which the Authority is not a party.

Appendix A: Funding Sources Overview, Process and Timeline – This appendix provides an overview, process and timeline of the funding sources for the Rosecrans/Marquardt Project.

Appendix B: Reference Documents – This appendix provides links to relevant reference documents for this Funding Plan.

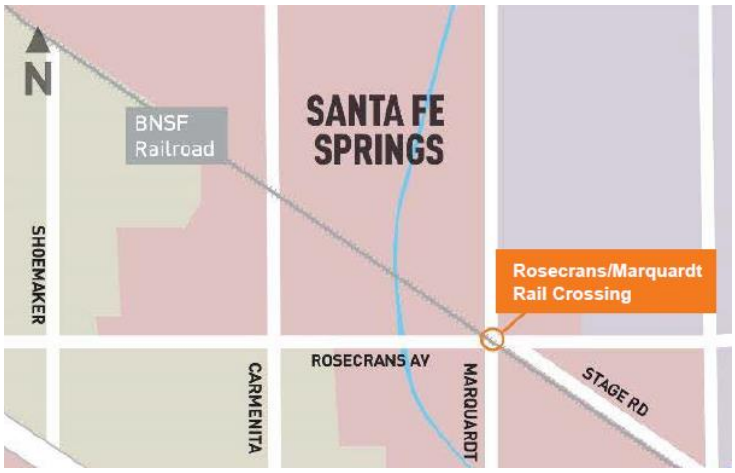
A. The Usable Segment

Streets and Highways Code section 2704.08, subdivision (d)(1)(A) requires identification of the corridor, or usable segment thereof, and the estimated full cost of constructing the corridor or usable segment thereof. A usable segment is defined as a portion of corridor that includes at least two stations.

Overview

The Board of Directors has identified and selected the Los Angeles to Anaheim Segment (as described below) as a Usable Segment by its adoption of this Funding Plan. As part of the selection process, the Board considered the criteria for prioritization set forth in Section 2704.08, Subdivision (f) of the S&H Code. The Rosecrans/Marquardt Project, which is the focus of this Funding Plan, is the first investment leading to implementation of the Usable Segment. **Exhibit A-1** shows the project location.

Exhibit A-1: Rosecrans/Marquardt Project Location



Source: Rosecrans/Marquardt Grade Separation Project: Community Open House Meetings presentation, slide 6; Los Angeles Metro, March 2016.

The Usable Segment

Pursuant to S&H Code section 2704.01, subdivision (g), a Usable Segment is defined as "a portion of a corridor that includes at least two stations." A "corridor" means a portion of the high-speed train system described in S&H Code section 2704.04. Phase 1 is a corridor.

The Usable Segment that is being selected with this Funding Plan consists of the portion of the Phase 1 corridor between and including the existing Los Angeles Union Station and the Anaheim Regional Transportation Intermodal Center (Los Angeles to Anaheim Segment) train stations. The Los Angeles to Anaheim Segment, as shown in **Exhibit A-2**, is approximately 30 miles and will connect Los Angeles and

Orange counties, with stations at least in downtown Los Angeles and Anaheim. The tracks needed for high-speed rail will share the existing LOSSAN rail corridor, one of the most heavily utilized passenger and freight rail corridors in the country. Existing passenger and freight rail services in the Los Angeles to Anaheim Segment will benefit from numerous capacity and safety improvements, including added track capacity and new grade separations at roadway intersections.

Exhibit A-2: Los Angeles to Anaheim Project Section

Source: California High-Speed Rail Authority and Federal Railroad Administration, 2016 (draft alignments, elements not to scale).

Based on the Authority's 2016 Business Plan (Capital Cost Basis of Estimate Report, Table 3, page 15), the total expenditure for completion of the Los Angeles to Anaheim Segment is estimated to be $2.329 billion in year 2015 dollars.[2] This cost estimate includes items that will enable the Authority to test and

[2] This reflects a change in capital cost estimates between the 2016 Business Plan and the 2014 Business Plan. As described in the 2016 Business Plan, this change was included since there was an overall cost savings on other parts of the system and because the design and project development had advanced sufficiently to produce a

run high-speed trains on the segment, including civil works, track, other railroad infrastructure, overhead catenary, train control, signaling, communications, and station improvements, as well as professional services and contingencies. High-speed trains and maintenance facilities, including a facility south of Los Angeles Union Station, are not included in this cost estimate; these items are included as part of the development of the rest of the Phase 1 system but are not assigned to specific sections for cost estimating purposes.

The Rosecrans/Marquardt Project

The Rosecrans/Marquardt Project is located between the proposed Norwalk/Santa Fe Springs and Fullerton high-speed rail stations. The Project is designed to allow a minimum of five tracks to pass underneath the roadway grade separation. **Exhibit A-3** shows the existing Rosecrans/Marquardt at-grade crossing. **Exhibit A-4** shows the proposed Rosecrans/Marquardt interchange following implementation of the Project.

In April 2012, the Authority adopted the 2012 Business Plan, which specifies its approach for sequentially implementing the Phase 1 high-speed rail system that will connect the Los Angeles Basin with the San Francisco Bay Area. The Business Plan spelled out the Authority's efforts to work closely with partner agencies in Southern California to advance and accelerate early investment projects in the Burbank to Anaheim corridor that will be the first elements of the high-speed rail system in the corridor of which the Rosecrans/Marquardt Project is one. The Authority's 2014 and 2016 Business Plans maintained the sequential-implementation approach identified in the 2012 Business Plan. Metro is the key partner in charge of developing and implementing the Rosecrans/Marquardt Project.

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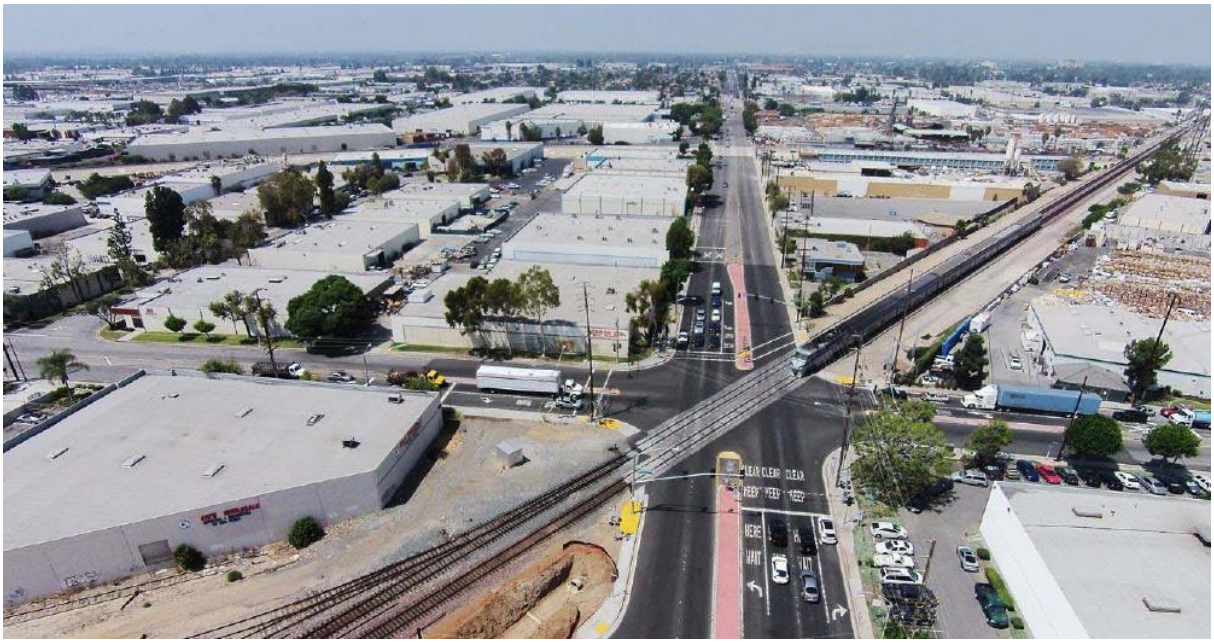
reasonably priced alternative for the Los Angeles to Anaheim section to enhance the improvements that the Authority would be including there.

The enhanced design increased investment in this corridor by about $1.8 billion in year 2015 dollars (or about $2.1 billion in year of expenditure dollars) from the 2014 Business Plan, which accounts for additional tracks and grade separations for enhanced capacity, speed and reliability in this high demand passenger rail corridor. A build alternative for the Los Angeles to Anaheim section is being evaluated that would include the design and construction of additional mainline track to accommodate new high-speed rail service and growth in service levels for existing passenger and freight rail services. The additional track would require limited right-of-way outside the existing rail corridor, some changes to existing grade separations, and some new grade separations.

Exhibit A-3: Rosecrans/Marquardt Existing At-Grade Crossing



Source: Rosecrans/Marquardt Grade Separation Project: Community Open House Meetings presentation, slide 11; Los Angeles Metro, March 2016.

Exhibit A-4: Rosecrans/Marquardt Proposed Grade Separation

Source: Rosecrans/Marquardt Grade Separation Project: Community Open House Meetings presentation, slide 12; Los Angeles Metro, March 2016.

Metro is developing the Project over several phases following their standard processes for a design-bid-build delivery approach. Phase I consists of Alternative Selection/Environmental/Preliminary Engineering

and was started in April 2015. Metro evaluated eight project alternatives and presented findings to the Santa Fe Springs City Council on December 22, 2015. The City Council approved Alternative 2 (Offset Overpass) as the locally preferred alternative (LPA). The Metro Board also approved Alternative 2 as the LPA on February 25, 2016. This alternative will:

- Raise Rosecrans Avenue (four lanes) over the tracks, with a realignment to the south.
- Connect Marquardt Avenue south of the crossing to Rosecrans Ave, under the bridge.
- Connect Marquardt Avenue north of the crossing to Stage Road.
- Connect Stage Road to Rosecrans Avenue and Anson Avenue via a connector road.

Metro completed the project's Alternatives Development Report in January 2016, which provided an evaluation of project alternatives and selection of a preferred alternative. The Rosecrans/Marquardt Project is exempt from California Environmental Quality Act (CEQA) requirements, as evidenced by a Notice of Exemption that Metro filed with the California Governor's Office of Planning and Research in February 2016. Metro is currently preparing an Environmental Assessment (EA) for the Project under the National Environmental Policy Act (NEPA), which must be completed prior to federal funds dependent on the EA flowing to the Project. Metro expects the EA will be completed by the end of 2017, along with an associated Finding of No Significant Impact (FONSI).

The Rosecrans/Marquardt Project will be completed based on design-bid-build project delivery, such that Metro will complete the project design work prior to issuing bid documents for project construction. Currently, Metro is conducting Phase II: Plans, Specifications, and Estimates (PS&E). Metro completed the 65% PS&E design documents in November 2016, which the Authority has reviewed. Metro plans to finish the 100% PS&E work in 2017, conduct the majority of right-of-way acquisition and utility relocation activities through 2018, and issue the construction bid documents in Winter 2019. Metro will then conduct Phase III: Construction, with a targeted date to complete the project in Fall 2021. The current levels of design are sufficient for development of the cost estimates described in Section D of this Funding Plan.

The Rosecrans/Marquardt Project schedule is as follows:

- *Phase 1: Alternative Selection/Environmental Clearance/Preliminary Engineering* – Spring 2015 to Mid-2017
- *Phase 2: Plans, Specifications, and Estimates* – Fall 2015 to Winter 2019
- *Phase 3: Construction* – Winter 2019 to Fall 2021

B. Sources of Funds and Anticipated Time of Receipt

Streets and Highways Code section 2704.08, subdivision (d)(1)(B) requires identification of the sources of all funds to be used and anticipated time of receipt thereof based on offered commitments by private parties, and authorizations, allocations, or other assurances received from governmental agencies.

This section describes the sources of funds for the Rosecrans/Marquardt Project. In addition to $76.665 million from Proposition 1A bond proceeds, other funding sources include $15.00 million from the U.S. Department of Transportation (US DOT) Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program, $8.135 million from the National Highway Freight Program (NHFP)/California Freight Investment Program (CFIP), $7.00 million from the Interregional Transportation Improvement Program (ITIP), $15.00 million from CPUC Section 190 funds, $26.50 million from Los Angeles County Measure R funds, and $7.00 million from BNSF Railway.

Exhibit B-1: Sources of Funds and Anticipated Time of Receipt for Rosecrans/Marquardt Project (*year of expenditure dollars in thousands)*

Source of Funds	Prior to FY 2016-17	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	TOTAL
Prop 1A	-	-	$18,693	$16,472	$20,000	$19,500	$2,000	**$76,665**
US DOT TIGER	-	-	-	$5,000	$7,000	$3,000	-	**$15,000**
NHFP/CFIP	-	-	$135	$6,500	$1,500	-	-	**$8,135**
ITIP	-	-	-	-	-	$5,000	$2,000	**$7,000**
Section 190	-	-	$7,500	$7,500	-	-	-	**$15,000**
Measure R	$2,558	$4,500	$6,000	$4,442	$5,500	$3,500	-	**$26,500**
BNSF	-	-	-	-	$7,000[3]	-	-	**$7,000**
Total Funding	**$2,558**	**$4,500**	**$32,328**	**$39,914**	**$41,000**	**$31,000**	**$4,000**	**$155,300**

Source: California High-Speed Rail Authority and Metro.

Exhibit B-1 summarizes the funding sources and amounts for the Rosecrans/Marquardt Project, including the anticipated annual cash flows (which specifies when the funds are expected to be received

[3]BNSF will provide in-kind services (e.g., flagging) during construction. Metro will advance BNSF's share of funds beyond the in-kind services that they will provide to the Project to meet Project cash flow needs. After Project completion, BNSF will reimburse Metro for $7 million, minus the value of the in-kind services BNSF provided during construction.

and used). A summary of each funding source is then provided. A high-level overview, process and timeline for each funding source is provided in Appendix A.

Prop 1A Bond Proceeds: The Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century, approved by California voters as Proposition 1A in November 2008, authorized the sale of over $9 billion in bond funding for construction of a high-speed rail system in California. SB 1029, approved in July 2012, appropriated $500 million in Proposition 1A funds to early investment projects in Southern California.

Of the total estimated project costs, Metro has estimated construction and right-of-way costs at $153.33 million, of which the Authority would fund $76.665 million (from Proposition 1A funds). Metro has estimated other project costs to be $1.970 million (which the Authority would not fund), resulting in a total project cost of $155.3 million.

Under S&H Code section 2704.12 and subsequent sections, the High-Speed Passenger Train Finance Committee[4] must first authorize the issuance of the bond funds. In 2013, the Committee authorized Prop 1A Bond funds in the amount of $8.6 billion. In 2015, the Sacramento Superior Court entered judgment validating that authorization.

US DOT TIGER: The US DOT TIGER Discretionary Grant program provides federal funding to build and repair freight and passenger transportation networks. Applicants must describe project benefits with respect to safety, economic competitiveness, state of good repair, quality of life, and environmental sustainability. Metro was the lead sponsor for a year 2016 TIGER application for the Rosecrans/Marquardt Project, and received notice of a $15.00 million TIGER grant award in July 2016. FRA will be the federal lead agency for this grant. Metro will negotiate the TIGER grant agreement with FRA after completion of NEPA clearance expected in December 2017. The agreement will include provisions for reporting requirements, project modifications, project completion/close-out, and performance monitoring. The TIGER grant agreement is expected to be executed in 2018.

NHFP/CFIP: The NHFP is a formula program for freight projects established by the Fixing America's Surface Transportation (FAST) Act, a federal transportation program signed into law in December 2015. The NHFP provides approximately $582 million of apportionments to California over the five-year period of the FAST Act. In addition to the NHFP funding, Assembly Bill 133 (Weber, 2016) provided an $11 million Traffic Congestion Relief Fund loan repayment to be used for trade corridor improvements. On June 27, 2016 the Governor signed SB 826 (Leno, 2016), which directs the CTC to allocate federal NHFP formula funds to corridor-based projects selected by local agencies and the state. The Commission began to develop guidelines in November 2016 and final guidelines are anticipated to be brought forward for Commission adoption in summer 2017.

[4] The Committee consists of the State Treasurer, the Director of Finance, the Controller, the Secretary of Transportation, and the Chairperson of the Authority. The State Treasurer serves as Chairperson of the Committee.

The purpose of the NHFP is to improve efficient movement of freight on the National Highway Freight Network, consisting of highways critical to the movement of freight as well as public roads in urbanized and non-urbanized areas which connect those highways with ports, intermodal freight facilities, and major freight generators. Railway-highway grade separation projects are among the eligible project types for NHFP funding.

In Southern California, the Southern California Association of Governments (SCAG) is the MPO responsible for generating a list of candidate projects for the region. SCAG and Caltrans plan to jointly designate the Rosecrans/Marquardt Project as a high priority project for the state and for the region (as intended by SB 826), with a planned allocation of $8.135 million in NHFP funding. This designation will ensure that the Project will receive its planned share of funds from NHFP. Metro will work with the Authority, SCAG, and Caltrans to submit the necessary NHFP application materials for the Project in summer 2017, in order to include the Project in the State's freight investment program. Caltrans will submit the State's freight investment program to the Federal Highway Administration (FHWA) for approval by November 2017. Following FHWA approval, the CTC will be asked to approve and allocate these funds in March 2018, at which point the funding will be available.

ITIP: The Interregional Transportation Improvement Program is a component of the California State Transportation Improvement Program (STIP), and is funded primarily from state fuel excise taxes. The ITIP provides funding for projects that improve interregional movement for people and goods across California on the State Highway System, and that develop intercity passenger rail corridors of strategic importance. Caltrans prepares the ITIP every two years, and submits the ITIP to the California Transportation Commission (CTC) for approval.

Caltrans prepared the 2016 ITIP in December 2015, and revised the 2016 ITIP in February 2016. Caltrans is reprogramming $7.00 million of ITIP funding to the Rosecrans/Marquardt Project. Caltrans will formalize this reprogramming of funds in the 2016 ITIP. CTC is expected to approve this reprogramming at its meeting scheduled on June 28 and 29, 2017.

Section 190: The State's Section 190 Grade Separation Program, administered by CPUC and Caltrans, provides state funding for grade separations between roadways and railroad tracks. CPUC develops and maintains a funding priority list of grade separation projects in the state based on factors including accident history, crossing geometrics, and traffic delays. Interested local agencies must submit grade crossing nominations to CPUC, with supporting information. The project on the priority list with the highest priority, as determined by CPUC, has first claim to the available funds based on an annual cap of $15.00 million. Certain technical requirements must be met to claim the funds, including completed environmental documents, completed construction plans, full project funding, and execution of construction and maintenance agreements.

The City of Santa Fe Springs is sponsoring the CPUC Section 190 application for the Rosecrans/Marquardt Project, with a funding request of $15.00 million. The City will submit its Section 190 funding application to CPUC and Caltrans in spring 2018. The funding is expected to be available

because Section 190 allocates the $15 million to the highest project on the CPUC grade separation priority list. The Rosecrans/Marquardt Project is the highest ranked project on the grade separation priority list for FY 2016-17 and will remain the #1 priority in FY 2017-18.

Measure R: Los Angeles County voters approved Measure R in November 2008. Measure R is a half-cent transportation sales tax in Los Angeles County that is in place for a 30-year timeframe, from State Fiscal Year (FY) 2009-10 to FY 2038-39. Measure R is funding a wide range of transportation projects throughout the county, including transit capital, highway capital, operations, and local return projects. The project categories are documented in a Measure R expenditure plan as adopted by the Metro Board. Measure R is expected to generate about $40 billion over the 30-year period. The Rosecrans/Marquardt Project was selected to be funded as a Metrolink capital improvement project and a grade separation within Los Angeles County as part of a group of projects in the Gateway Cities at Metro's Planning and Programming Committee meeting in September 2013. This commitment was further reiterated with the specific amount of $26.50 million from Measure R at Metro's Planning and Programming Committee meeting in January 2017.

BNSF: Code of Federal Regulations Section 646.210 specifies that where a Federal-aid grade separation project will eliminate one or more existing grade crossings that currently have active warning devices, the railroad funding share shall be 5 percent of the project costs for preliminary engineering, right-of-way, and construction. The funding share can differ from 5 percent if agreed upon by the railroad and the project sponsor. Based on current discussions between Metro and BNSF, BNSF will make the 5 percent statutorily stipulated contribution to this project. It is currently anticipated that this contribution is $7.00 million. BNSF will provide in-kind services (e.g., flagging) during construction. Metro will advance BNSF's share of funds beyond the in-kind services that they will provide to the Project to meet Project cash flow needs. After Project completion, BNSF will reimburse Metro for $7 million, minus the value of the in-kind services BNSF provided during construction. The statutorily stipulated funding commitment and details of how it will be provided will be specified in Construction & Maintenance (C&M) agreements that are currently being negotiated between Metro, BNSF, and the City of Santa Fe Springs. These agreements are expected to be finalized in summer 2017 and are discussed further in Section F of this Funding Plan.

C. Projected Ridership and Operating Revenue

Streets and Highways Code section 2704.08, subdivision (d)(1)(C) specifies inclusion of a projected ridership and operating revenue report.

The Los Angeles to Anaheim Segment, on which the Rosecrans/Marquardt Project is located, is currently served by the following passenger rail services:

- *Metrolink Orange County Line*: SCRRA provides Metrolink regional rail service between Los Angeles Union Station (LAUS) in downtown Los Angeles and Oceanside in San Diego County, via Anaheim in Orange County. Metrolink operates 14 southbound trips and 15 northbound trips per weekday in the Los Angeles to Anaheim Segment (five of these southbound trips and five of these northbound trips per weekday operate only between Fullerton and Anaheim).

- *Metrolink 91/Perris Valley Line:* SCRRA provides Metrolink regional rail service between LAUS in downtown Los Angeles and Perris in Riverside County, via Fullerton in Orange County. Metrolink operates five southbound trips and four northbound trips per weekday in the Los Angeles to Anaheim Segment (trains run between Los Angeles and Fullerton).

- *Amtrak:* Amtrak operates Pacific Surfliner intercity rail service between LAUS in downtown Los Angeles and downtown San Diego, via Anaheim. The service also extends north of LAUS to locations including Burbank, Santa Barbara, and San Luis Obispo. The LOSSAN Rail Corridor Agency provides this service, with 12 round trips per weekday in the Los Angeles to Anaheim Segment. In addition, Amtrak long-distance service (the Southwest Chief to/from Chicago) also serves this segment, with one round trip per day between Los Angeles and Fullerton.

High-Speed Rail Ridership Forecasts

The Authority will run service on the Los Angeles to Anaheim Segment once it is connected to a larger part of the statewide high-speed rail system in Phase 1 and the Authority's forecasts for that service are available in the 2016 Business Plan as noted below and incorporated into this Funding Plan by reference.[5]

[5] The ridership forecasts for the Authority's service that will use the Los Angeles to Anaheim Segment are provided in the 2016 Business Plan in Section 7: Forecasts and Estimates, as well as associated technical documents available on the Authority's website at http://hsr.ca.gov/About/Business_Plans/2016_Business_Plan.html.

Additionally, further technical information on the Authority's ridership and revenue forecasts is available on the Authority website here: http://hsr.ca.gov/About/ridership_and_revenue.html

Adding the Los Angeles to Anaheim Usable Segment, which the Rosecrans/Marquardt Project is a part of, produces a significant (close to 25%) increase in high-speed rail ridership. The medium case ridership forecast for the Phase 1 high-speed rail system connecting San Francisco and Anaheim in the year 2040 is 42.8 million riders. This is 8.3 million higher than the year 2040 ridership if the system did not include the Los Angeles to Anaheim Segment (i.e., a system that connects San Francisco and downtown Los Angeles, without service to Anaheim).

Metrolink and Amtrak Historical Ridership

Exhibit C-1 describes annual ridership and operating revenue since FY2011-12 for the Metrolink and Amtrak passenger rail services that serve the Los Angeles to Anaheim Segment. From FY2011-12 to FY2015-16, total ridership of those services increased by 11% and total operating revenue increased by 57%.

Exhibit C-1: Ridership and Operating Revenue, Los Angeles to Anaheim Segment

Ridership					
	FY2011-12	FY2012-13	FY2013-14	FY2014-15	FY2015-16
Metrolink Orange County Line	2,292,243	2,600,633	2,519,114	2,585,647	2,502,065
Metrolink 91/ Perris Valley Line	586,410	616,892	608,328	680,745	735,288
Amtrak Pacific Surfliner	2,664,935	2,689,465	2,673,170	2,827,134	2,927,960
Total	5,543,588	5,906,990	5,800,612	6,093,526	6,165,313

Operating Revenue					
	FY2011-12	FY2012-13	FY2013-14	FY2014-15	FY2015-16
Metrolink Orange County Line	$ 21,384,000	$ 23,920,000	$ 23,650,000	$ 24,014,000	$ 24,861,000
Metrolink 91/Perris Valley Line	$ 4,187,000	$ 4,389,000	$ 5,383,000	$ 4,560,000	$ 5,526,000
Amtrak Pacific Surfliner	$ 42,884,431	$ 64,446,130	$ 69,013,726	$ 75,246,335	$ 77,308,000
Total	$ 68,455,431	$ 92,755,130	$ 98,046,726	$ 103,820,335	$ 107,695,000

Sources: Metrolink Budgets (FY2013-14 to FY2016-17); LOSSAN Rail Corridor Agency Business Plan, FY2016-17 to FY2017-18, April 2016. Metrolink FY2015-16 ridership and fare revenue, and Amtrak FY2015-16 ridership, were provided by the LOSSAN Rail Corridor Agency in October 2016.

The numbers provided in **Exhibit C-1** reflect actual data, with the exceptions of Metrolink FY2015-16 operating revenue (sum of actual fare revenue and non-fare revenue budgeted) and Amtrak Pacific Surfliner FY2015-16 operating revenue (budgeted).

Metrolink data is provided for state fiscal years, running from July of the previous calendar year to June of the same calendar year. Amtrak Pacific Surfliner data is provided for federal fiscal years, running from October of the previous calendar year to September of the same calendar year. As such, the totals of these services shown in **Exhibit C-1** do not correspond to a consistent timeframe.

Ridership and operating revenue are provided for each service as a whole, which includes riders who traverse all or part of the Los Angeles to Anaheim Segment as well as riders who do not traverse the Los Angeles to Anaheim Segment (i.e., riders who board and alight Amtrak service north of Los Angeles, riders who board and alight Metrolink service east of Fullerton, and riders who board and alight Metrolink or Amtrak services south of Anaheim). Amtrak and Metrolink do not provide data limited to the Los Angeles to Anaheim Segment only.

Operating revenue includes fare revenue and non-fare revenue (for Metrolink including dispatching fees, maintenance of way payments from other agencies; for Amtrak including food and beverage, and miscellaneous). Operating revenue for Metrolink services are rounded to the nearest thousand, consistent with the Metrolink budgets. The significant increase in Amtrak Pacific Surfliner operating revenue from FY2011-12 to FY2012-13 is the result of a FY2012-13 fare change in combination with ridership growth.

Metrolink and Amtrak Ridership Forecasts

As noted in the Introduction section, the Rosecrans/Marquardt Project is the last grade separation necessary before increased benefits for freight and passenger rail services can be realized from the Triple Track project. The Triple Track project, which, when completed, will have added 15 miles of a third mainline track between Los Angeles and Fullerton, will allow for increased capacity in LOSSAN intercity and regional rail service. The completion of the Triple Track project will enable 32 more passenger rail trains to operate daily in the LOSSAN corridor.

Metrolink has budgeted the following FY2016-17 ridership and operating revenue numbers for the Orange County and 91/Perris Valley lines (*Source: Fiscal Year 2016-17 Adopted Budget, Exhibits 3.1a and 3.1b, pages 31 and 32; Southern California Regional Rail Authority, adopted June 24, 2016*):

- *Metrolink Orange County Line*: ridership of about 2.8 million (10% increase from FY2015-16 budget), operating revenue of about $25.5 million (8% increase from FY2015-16 budget)
- *Metrolink 91/Perris Valley Line:* ridership of about 738,000 (21% increase from FY2015-16 budget), operating revenue of about $5.7 million (4% increase from FY2015-16 budget)

With enhancements to the existing network including modest service growth assumptions, Metrolink projects that average weekday ridership on the Orange County Line would increase by 0.6% from the

year 2015 to the year 2025, and average weekday ridership on the 91/Perris Valley Line would increase by 109.9% from 2015 to 2025[6] (*Source: 10-Year Strategic Plan: Technical Appendix, Scenario 1: Enhancement of Existing Network, Figure 7-5, page 207; Southern California Regional Rail Authority, March 2016*). Completion of the Triple Track project, which requires implementation of the Rosecrans/Marquardt Project, will be necessary in order to achieve the service level increases that these ridership forecasts are based on. The decisions regarding provision of additional service in the corridor will be made by the Metrolink Board of Directors.

For FY2016-17, the LOSSAN Agency has budgeted a 2% increase in ridership and a 2% increase in operating revenue for the Amtrak Pacific Surfliner service, relative to the FY2015-16 budget (*Source: Pacific Surfliner Fiscal Year 2016-17 Operating Budget Projections; LOSSAN Board of Directors meeting, September 19, 2016*). The Pacific Surfliner FY2016-17 budgeted numbers are ridership of about 3.0 million and operating revenue of about $78.8 million.

With increases in service from 24 one-way train trips per weekday to 36 one-way trains per weekday, annual ridership on LOSSAN intercity trains is projected to increase to about 4.7 million riders in the year 2030, or about 61% higher than current ridership levels (*Source: LOSSAN Corridorwide Strategic Implementation Plan, Year 2030 Build Scenario, Table 12, page 38; LOSSAN Agency, April 2012*). Completion of the Triple Track project, which requires implementation of the Rosecrans/Marquardt Project, will be necessary in order to achieve the service level increases that these ridership forecasts are based on. The decisions regarding provision of additional service in the corridor will be made by the LOSSAN Board of Directors.

[6] The differences in ridership growth projections between the Orange County Line and the 91/Perris Valley Line are due to different population and employment growth forecasts between various parts of Metrolink's service area. In addition, the 91/Perris Valley Line is projected to have a significantly higher percentage increase in service levels than the Orange County Line, particularly for peak period / peak direction service.

D. Projected Construction Cost

Streets and Highways Code section 2704.08, subdivision (d)(1)(D) requires inclusion of a construction cost projection including estimates of cost escalation during construction and appropriate reserves for contingencies.

The estimated cost of the Rosecrans/Marquardt Project is $155.3 million in year of expenditure dollars, as shown in **Exhibit D-1**.

Exhibit D-1: Rosecrans/Marquardt Project Cost by Category

Item Description	Amount
General Items	$ 4,104,000
Roadway/Civil	$ 5,122,811
Traffic	$ 3,673,100
Landscaping & Irrigation	$ 869,500
Drainage	$ 727,360
Utilities	$ 437,650
Railroad	$ 1,090,000
Structures	$ 24,432,015
Third Party Utility Relocations	$ 4,189,000
Building Demolition	$ 1,600,000
Construction Cost, Sub-Total (year 2016 $)	**$ 46,245,436**
Contingency, Construction (20% of construction cost)	$ 9,249,087
Metro Programs	$ 2,774,726
Soft Costs	$ 19,700,992
Project Cost, Sub-Total (year 2016 $, excluding unallocated contingency, escalation, and right-of-way)	**$ 77,970,242**
Contingency, Unallocated (10% of project cost)	$ 7,798,000
Project Cost, Sub-Total With Unallocated Contingency (year 2016 $, excluding escalation and right-of-way)	**$ 85,768,242**
Escalation, Project Cost to Year of Expenditure (12.55% or 3.0% annually)	$ 10,764,670
Right-of-Way (year 2016 $, excluding contingency and escalation)	$ 47,500,000
Contingency, Right-of-Way (10% of right-of-way cost)	$ 4,750,000
Escalation, Right-of-Way (12.55% on ROW and ROW contingency)	$ 6,557,835
Total Project Cost (year of expenditure $, including right-of-way)	**$ 155,300,000**

Source: Metro, December 2016.

Notes: General Items include mobilization, erosion control, and a Stormwater Pollution Prevention Program. Railroad includes railroad flagging & inspection and at-grade rail crossing demolition & rehabilitation. Metro Programs include programs for local hiring, safety, quality assurance/quality control, Buy America, and small/disadvantaged businesses. Soft Costs include

environmental studies, preliminary engineering, final design, project/construction management, liability & insurance, legal, permits, and surveying/testing. Total Project Budget Cost was rounded to the nearest $100,000.

The cost estimate provided in Exhibit D-1 is based on the 65% PS&E design documents completed in November 2016. This construction cost estimate is inclusive of reserves for contingencies ($21.8 million in year 2016 dollars, including construction contingency, unallocated contingency, and right-of-way contingency) and cost escalation during construction ($17.3 million, of which $2.7 million is escalation on reserves for contingencies). In YOE dollars (inclusive of escalation) the contingency comprises $24.5 million. As with any construction project, construction cost projections will be updated as the project progresses.

Approach and Methodology

The methodology used to provide the cost estimates is consistent with Caltrans' standard estimating practice, which extrapolates unit prices from the Caltrans Contract Cost Database and was reviewed and judged based on recent projects of similar and comparable magnitude. In addition, data from recent grade separation projects was used in providing the unit costs.

Additional items taken into account were as follows:

- The cost of third-party utility relocation was based on comparable projects and the expertise of a utility coordination consultant.
- Building demolition costs were assumed based upon existing buildings which conflict with the proposed roadway alignment.
- A construction contingency of 20% was allocated based on completion of project design at a 65% level, and an additional 10% of unallocated contingency was included as mandated by the Metro Board of Directors.
- Metro Programs used a 5% allowance for programs currently in place such as Local Hiring Project Labor Agreement & Construction Careers Policy, Safety, Quality Assurance/Quality Control, Buy America, Mandatory Good Faith Effort, and Small Business/Small Disadvantage Enterprise.
- Soft costs were estimated based upon the Federal Transit Administration's (FTA's) Transit Cooperative Research Program (TCRP) report titled "Estimating Soft Costs for Major Public Transportation Fixed Guideway Projects."
- Right-of-way costs were estimated based on appraisals conducted to-date on full takes (i.e., full acquisition of a property) and estimates for the partial takes (i.e., partial acquisition of a property) based on estimating practices used by Metro's Real Estate Department. Right-of-way contingency and escalation are listed separately.
- Escalation costs were factored into the estimate based on a 3% annual escalation factor,

compounded for four years from year 2016 base year costs, assuming a construction start date in late 2019 and a mid-point of construction in the year 2020.

E. Material Changes

Streets and Highways Code section 2704.08, subdivision (d)(1)(E) requires inclusion of a report describing any material changes from the plan submitted pursuant to subdivision (c) for this corridor or usable segment thereof.

In 2012, the Legislature passed SB 1029 appropriating $500 million of Prop 1A proceeds from S&H Code section 2704.04 for projects in Southern California without a subdivision (c) Funding Plan. As there was no Funding Plan developed under subdivision (c) prior to the Legislature's appropriation, there are no material changes to report.

F. Terms and Conditions of Agreements

Streets and Highways Code section 2704.08, subdivision (d)(1)(F) requires a description of the terms and conditions associated with any agreement proposed to be entered into by the authority and any other party for the construction or operation of passenger train service along the corridor or usable segment thereof.

This section summarizes the agreements that the Authority has entered into or plans to enter into with other agencies in order to fund and implement the Rosecrans/Marquardt Project along with key agreements amongst other project partners that the Authority is not a party to but will work with the other partners to ensure that those other agreements work in concert with agreements to which the Authority will be a partner.

Southern California MOU: The Authority and several partner agencies (City of Anaheim, Los Angeles County Metropolitan Transportation Authority, Riverside County Transportation Commission, San Diego Association of Governments, Southern California Association of Governments, and Southern California Regional Rail Authority) signed the 2012 Southern California MOU to advance statewide rail modernization by starting to invest in local rail systems that will eventually be part of or connect with the statewide high-speed rail system. Through this MOU, the Authority and its partners are leveraging resources, working together to secure new funding, identifying and prioritizing early investment projects, and implementing project improvements in an expedited manner. The MOU specifies a list of early investment projects in Southern California identified by the signatory agencies based on a documented project selection process. The Rosecrans/Marquardt Project is one of the prioritized projects listed in the MOU, which reflects the project's regional importance.

The Southern California MOU does not, by itself, allocate funds or assign roles and responsibilities to individual projects. The MOU indicates that subsequent project-level MOUs or other agreements will be developed to specify this information.

Rosecrans/Marquardt Project Management and Funding Agreement: The Authority and Metro are in the process of negotiating a Project Management and Funding Agreement (PMFA) (as required by SB 1029) to define their primary roles and responsibilities with regard to the Rosecrans/Marquardt Project. The Authority and Metro have reached concurrence on several aspects of this agreement, which include:

- The Authority will fund up to 50 percent of actual eligible project costs up to a maximum amount of $76.665 million. The Authority is a funding partner only, and will not take on obligations related to project implementation or the future operations and maintenance of the Project (or any Metro operations) upon completion. At no time will Authority funds reimburse more than 50% of the total eligible project costs incurred to date.

- Metro will certify to the Authority at certain waypoints that the Project is in conformance with key aspects of the design, including vertical and horizontal clearances for the overpass, and to ensure the completed Project requires no future re-work in order to accommodate high-speed trains (additional improvements, such as electrification, will be necessary). In addition, these key design aspects may not be modified without the Authority's written approval.

- Metro will provide quarterly reports to the Authority with budget and schedule trending, project progress, key issues, and change order summaries. Between quarterly reports, the Authority will have reasonable access to all Project documents, and the construction site subject to certain safety requirements. Metro will provide documentation to the Authority with each invoice to ensure all funded activities are within the project scope and cost.

- Metro will not begin construction until all funds are secured to complete construction. If for some reason the Project does not move forward, then any right-of-way bought up to that point will be sold, and the money generated will be used to refund the partners who helped pay for that right-of-way (including the Authority).

- The Authority will not have any operations and maintenance obligations with regard to the Project or other train services operating in the corridor.

Agreements to be established between Metro and other agencies (to which the Authority would not be a party), including the City of Santa Fe Springs and BNSF, will be consistent with the roles and responsibilities identified in the PMFA – specifically, the PMFA will obligate Metro to enforce promises made to Metro in those agreements (such as funding and site access) and will obligate Metro to ensure consistency between the PMFA and those other agreements.

Rosecrans/Marquardt Construction and Maintenance Agreements: Metro is currently negotiating Construction & Maintenance (C&M) agreements with BNSF Railway and the City of Santa Fe Springs. While the Authority will not be a signatory to the C&M agreements, the Authority will review the agreements prior to their execution. The agreements will further describe roles and responsibilities of Metro, the City of Santa Fe Springs, and BNSF Railway with respect to project construction and maintenance, including overpass design and construction, removal of the existing at-grade crossing, utility relocation, flagging services, inspection, and ongoing maintenance. The agreements will also identify requirements applicable to the construction contractor to be selected by Metro.

Specifically, the agreements are anticipated to include the following key obligations for Metro, the City of Santa Fe Springs and BNSF Railway:

- BNSF will grant a license to Metro to construct the Project, including:

    - Operating, maintaining, renewing or relocating existing railroad track or other facilities under the corridor

    - Constructing, operating, maintaining other facilities deemed appropriate by BNSF

    - Using or operating the corridor when needed and based on BNSF approval for construction of the Project

- BNSF will provide labor, materials, engineering services, etc. for work required to be performed by BNSF for the construction of the Project, including removal of the existing at-grade crossing
- BNSF will contribute the statutorily stipulated share, currently estimated at $7 million. BNSF will provide in-kind services (e.g., flagging) during construction. Metro will advance BNSF's share of funds beyond the in-kind services that they will provide to the Project to meet Project cash flow needs. After Project completion, BNSF will reimburse Metro for $7 million, minus the value of the in-kind services BNSF provided during construction.
- Project design work will be conducted by Metro and approved by Project partners
- Metro will obtain all necessary permits and approvals, including from the CPUC to authorize construction of the Project, and will be the Responsible Agency for seeking all Project approvals
- Metro will construct and manage all principal elements of the project, including preliminary and final engineering, design and construction of the overpass, and other project related duties and responsibilities (maintenance, pedestrian access, etc.).
- Metro will acquire all necessary properties for the Project
- During the design process, Project partners will all review plans at specific design stages and will be asked to approve the design before its final completion
- When the Project is completed, Metro will perform all closeout duties
- The City will facilitate the Project by notifying utilities and assisting in payment for utility relocation
- At the completion of the Project, BNSF will own and maintain all railroad track and facilities, however, the City will own and maintain the overpass, highway approaches and other related infrastructure. BNSF will grant the City an easement to maintain the overpass.

The agreements also include terms covering review and approval processes, rules for access and flagging on the rail corridor, dispute resolution, and other terms related to the execution of the key terms described above.

Appendix A: Funding Sources Overview, Process and Timeline

Exhibit G-1 provides an overview of the funding sources for the Rosecrans/Marquardt Project, including which type(s) of expenses each funding source can be applied towards.

Exhibit G-1: Overview of Funding Sources for Rosecrans/Marquardt Project

Source of Funds	Overview
CHSRA Proposition 1A	- Proposition 1A was approved by California voters in November 2008. Senate Bill 1029, approved in July 2012, appropriated $500 million in Proposition 1A capital funds for certain early investment projects in Southern California.
US DOT TIGER	- Discretionary federal grant program to build and repair freight and passenger transportation networks. - Funds can be used for construction costs only. Expenses prior to construction are not eligible.
NHFP/CFIP	- Federal formula program for freight projects established by the Fixing America's Surface Transportation (FAST) Act, signed into law in December 2015. Purpose is to improve efficient movement of freight, including on critical urban freight corridors. - Funds can be used for project development, construction, and right-of-way expenses.
ITIP Intercity Rail Funds	- State funding for projects that improve interregional movement for people and goods across California on the State Highway System, and that develop intercity passenger rail corridors of strategic importance. - Funds can be used for project development, construction, and right-of-way expenses.
CPUC Section 190	- State funding for grade separations between roadways and railroad tracks, allocated based on a priority list of projects throughout the state. - Funds can be used for any project expense.
Measure R	- Half-cent sales tax measure approved by Los Angeles County voters in 2008 that is funding a wide range of transportation projects throughout the county. - Funds can be used for any project expense.
BNSF	- For federal-aid grade separation projects, the applicable railroad funding share is 5 percent of the project costs for preliminary engineering, right-of-way, and construction. The funding share can differ from 5 percent if agreed upon by the railroad and the project sponsor. - Funds can be used for preliminary engineering, construction, and right-of-way expenses.

Exhibit G-2 specifies the process and timeline for each funding source.

Exhibit G-2: Process and Timeline of Funding Sources for Rosecrans/Marquardt Project

Source of Funds	Process and Timeline
CHSRA Proposition 1A	- The subdivision (d) Funding Plan will be provided to the California High-Speed Rail Authority Board of Directors for approval in June 2017. - Following Board approval, the Plan will be submitted to the Department of Finance (DOF) and the Joint Legislative Budget Committee (JLBC). The DOF Director has up to 60 days following submission, and after receiving any communication from the JLBC, to determine if the plan is likely to be successfully implemented as proposed. - Following DOF approval, bond sales will begin to take place in Fall 2017 and funding will begin to be available by early 2018. - Other required elements to expend bonds include the Project Management and Funding Agreement (PMFA) and the Accountability Plan. Both are expected to be completed in summer 2017.
US DOT TIGER	- Metro was the lead sponsor for a year 2016 TIGER application for the Rosecrans/Marquardt Project, and received notice of a $15 million TIGER grant award from the US Department of Transportation (US DOT) in July 2016. FRA will be the federal lead agency for this grant. Funds must be expended by September 2024. - National Environmental Policy Act (NEPA) clearance is required prior to receipt of TIGER funding. Metro will execute funding agreements with FRA after completion of NEPA clearance, expected by November 2017. - Funds are expected to be available in 2018.
NHFP/CFIP	- The program is being developed right now and the Rosecrans/Marquardt Project is included in the funding list. SCAG and Caltrans will jointly designate the Rosecrans/Marquardt Project as a high priority project for the state and for the region, with a planned allocation of $8.135 million in NHFP funding. This designation will ensure that the Project will receive its planned share of funds from NHFP. - Metro will work with the Authority, the Southern California Association of Governments (SCAG), and the California Department of Transportation (Caltrans) to submit the necessary NHFP application materials for the Project in summer 2017, in order to include the Project in the State's freight investment program. - Caltrans will submit the State's freight investment program to the Federal Highway Administration (FHWA) for approval by November 2017.

Source of Funds	Process and Timeline
	- Following FHWA approval, the California Transportation Commission (CTC) will be asked to approve and allocate these funds in March 2018, at which point the funding will be available.
ITIP Intercity Rail Funds	- Caltrans is reprogramming $7 million of Intercity Rail funds from the 2016 Interregional Transportation Improvement Program (ITIP). CTC is expected to approve this reprogramming at its meeting scheduled on June 28 and 29, 2017.
CPUC Section 190	- The Rosecrans/Marquardt Project is #1 on the CPUC grade separation priority list for FY 2016-17 and will remain the #1 for FY 2017-18. The City of Santa Fe Springs will submit an application for funding to the California Public Utilities Commission (CPUC) in spring 2018. - The top project on the priority list receives the funding and the funds are expected to be available in summer 2018.
Measure R	- Measure R funds are currently being used.
BNSF	- BNSF will provide in-kind services (e.g., flagging) during construction. Metro will advance BNSF's share of funds beyond the in-kind services that they will provide to the Project to meet Project cash flow needs. After Project completion, BNSF will reimburse Metro for $7 million, minus the value of the in-kind services BNSF provided during construction. - This funding commitment will be specified in Construction & Maintenance (C&M) agreements that are currently being negotiated between Metro, BNSF, and the City of Santa Fe Springs. These agreements are expected to be finalized in summer 2017.

Appendix B: Reference Documents

California High-Speed Rail Authority, 2016 Business Plan (May 2016)	Link
California High-Speed Rail Authority, 2014 Business Plan (April 2014)	Link
California High-Speed Rail Authority, 2012 Business Plan (April 2012)	Link
California High-Speed Rail Authority, Los Angeles to Anaheim Project Section Supplemental Alternatives Analysis Report	Link
California Proposition 1A, 2008 High-Speed Rail Act (November 2008)	Link
California State Legislature, Senate Bill 1029 (July 2012)	Link
California Streets and Highways Code, Section 2704.08	Link
Code of Federal Regulations, Section 646.210	Link
Los Angeles Metro, Rosecrans/Marquardt Grade Separation Overview Fact Sheet (September 2015)	Link
Los Angeles Metro, Rosecrans/Marquardt Grade Separation Community Open House Meetings Presentation (March 2016)	Link
Los Angeles Metro, Rosecrans/Marquardt Grade Separation Alternatives Development Report (January 2016)	Link
Southern California Memorandum of Understanding (2012)	Link

Independent Financial Advisor Report
To California High-Speed Rail Authority Regarding:

Los Angeles to Anaheim Usable Segment - Incremental Capital Investment (#1) Rosecrans/ Marquardt Grade Separation

Project Finance Advisory Ltd.
June 8, 2017

PFAL Project Finance Advisory Ltd.

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Table of Figures

Key Terms and Definitions

AB 1889: Assembly Bill No. 1889, Stats. 2016, ch. 774

Authority: California High-Speed Rail Authority

BNSF: BNSF Railway, owner of rail right-of-way at the Rosecrans/Marquardt Grade Separation Project site

City of Santa Fe Springs: Governmental agency with city limits around the RM Grade Separation Project and owner of roadway right-of-way

Conventional Passenger Train Service: Conventional rail service such as Metrolink and Amtrak service

C&M Agreement: Construction and Maintenance Agreement between Metro and BNSF, currently in draft form

DB: Design-Build

DBB: Design-Bid-Build

FRA: Federal Railroad Administration

FTA: Federal Transit Administration

High-Speed Train Operation: Authority high-speed train service as envisioned in the 2016 Business Plan and Ridership and Revenue Forecasting Technical Supporting Document to the 2016 Business Plan

HSR: High-Speed Rail

Local Assistance: As used in SB 1029 for use of funds for Item 2665-104-6043 of Section 2 of the Budget Act of 2012

Los Angeles to Anaheim Segment: The usable segment from Los Angeles Union Station and Anaheim Regional Transportation Intermodal Center on which lies the Rosecrans/Marquardt Grade Separation

Metro: Los Angeles County Metropolitan Transportation Authority, lead agency for implementation of the Rosecrans/Marquardt Grade Separation project

RM Funding Plan: Incremental Capital Investment (#1) Rosecrans/Marquardt Grade Separation RM Funding Plan

Phase 1: California High-Speed Rail Program Phase 1, as defined in 2016 Business Plan, from San Francisco and Merced to Los Angeles and Anaheim

PMFA: Project Management and Funding Agreement between the Authority and Metro with terms and conditions governing the use of Prop 1A proceeds to be finalized and executed post Report

Prop 1A: Proposition 1A, the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century, (added by Stats. 2008, ch. 267 (AB 3034)), codified at Streets and Highways Code 2704, et seq.

Report: Independent report pursuant to California Streets and Highways Code 2704.08(d)(2) addressing the Rosecrans/Marquardt Grade Separation Project RM Funding Plan

SB 1029: Senate Bill No. 1029 Budget Act of 2012

SoCal MOU: Southern California Memorandum of Understanding between the Authority and seven partner agencies for the study, design, and construction of HSR in the Southern California Region

"**Operating and Maintenance Costs**," within the meaning of Streets and Highways Code section 2704.08, subdivision (d)(2)(D)) means: ongoing operating and maintenance costs, that is, the cost of running the trains and maintaining the infrastructure and rolling stock in a state of good repair. It does not include capital asset renewal (or lifecycle) costs, which is the cost of replacing or refurbishing worn out components at the end of their useful life.

"**The planned passenger service to be provided by the Authority, or pursuant to its authority, will not require an operating subsidy**" means: within a reasonable period of time after commencement of high-speed train operations on the usable segment, project revenues will reach an operating break-even point at which aggregate revenues up to that point in time equal Authority-borne operating and maintenance costs to that point in time and such revenues will continue to equal or exceed operating and maintenance costs thereafter.

"**Revenues**," within the meaning of Streets and Highways Code section 2704.08, subdivision (d)(2)(D)) means: fare box revenues and ancillary revenues. Fare box revenue is income from ticket sales. Ancillary revenues include other income the Authority may receive from sources related to the everyday business operations of

the high-speed rail, including but not limited to on-board sales (e.g., sales of foods or sundries), station-related revenues, advertising, and revenues from leases of excess or non-operating right-of-way parcels or areas, as well as areas above or below operating rights-of-way or of portions of property not currently being used as operating rights-of-way. Ancillary income does not include unexpected or "one time" events.

"**Suitable and ready for high-speed train operation**" means as stated in Assembly AB 1889 means: if the bond proceeds, as appropriated pursuant to Senate Bill 1029 of the 2011–12 Regular Session (Chapter 152 of the Statutes of 2012), are to be used for a capital cost for a project that would enable high-speed trains to operate immediately or after additional planned investments are made on the corridor or useable segment thereof and passenger train service providers will benefit from the project in the near-term.

Disclaimer

Project Finance Advisory Limited ("PFAL") has performed an independent review of the Los Angeles to Anaheim Usable Segment - Incremental Capital Investment (#1) Rosecrans/Marquardt Grade Separation Project Funding Plan ("RM Funding Plan") as directed by the California High-Speed Rail Authority ("Authority") and as described in PFAL's executed task order with the Authority dated December 21, 2016.

This independent review was performed using documents and information provided by the Authority (listed in the Bibliography and body of this Report) and developed using currently accepted professional practices and procedures. PFAL, with the Authority's permission, has relied upon the accuracy and completeness of the documents and information provided by the Authority. The accuracy of the documents and information provided by the Authority and other publicly available material reviewed by PFAL in connection with this Report were reviewed for reasonableness but not independently verified by PFAL. PFAL does not assume responsibility for verifying such material.

This Report does not serve as an accounting audit. Furthermore, this Report should not be relied upon for any financing or investment decision. It is possible that there are other elements of risk associated with the RM Funding Plan beyond those presented in this Report.

Any financial estimates, analyses or other conclusions in the Report represent PFAL's professional opinion as to the general expectancy concerning events as of the evaluation date and are based solely upon the documents and information provided by the Authority and reviewed by PFAL. However, the accuracy of any financial estimate, analysis or other information set forth in the Report is dependent upon the occurrence of future events, which cannot be assured. Additionally, these estimates and analyses rely upon the assumptions contained therein, the accuracy of which remains subject to validation, further refinement and the occurrence of uncertain future events.

Estimates should not be construed as statements of fact. There may be differences between the projected and actual results because events and circumstances do not occur as expected.

The information and conclusions presented in this Report should be considered as a whole. Selecting portions of any individual conclusion without considering the analysis set forth in the Report as a whole may promote a misleading or incomplete view of the findings and methodologies used to obtain these findings.

Executive Summary

Project Finance Advisory Limited ("PFAL") was appointed by the California High-Speed Rail Authority ("Authority") to provide independent consultant services following a competitive procurement process that concluded in December 2015. For the purposes of completing this report, the PFAL team includes sub-consultants David Evans and Associates, Inc. ("DEA"), Anrab Associates ("Anrab"), and The Elliott Consulting Group.

This independent consultant report ("Report") provides the PFAL-led team's review of the Los Angeles to Anaheim Usable Segment - Incremental Capital Investment (#1) Rosecrans/Marquardt Grade Separation Project Funding Plan ("RM Funding Plan") dated June 2017 developed by the Authority pursuant to SHC 2704.08(d)(1). The RM Funding Plan calls for $76.665 million of Proposition 1A ("Prop 1A") bond proceeds - as appropriated in Senate Bill ("SB") 1029 - for the funding of the Rosecrans/Marquardt Grade Separation Project ("RM Grade Separation Project") located in Santa Fe Springs, California.

PFAL's role is to fulfill the legislative requirement to perform an independent review of the RM Funding Plan to determine if it meets the criteria set forth in California Streets and Highways Code ("SHC") 2704.08(d)(2). Our findings, described in this report, address the following areas of investigation required under statute:

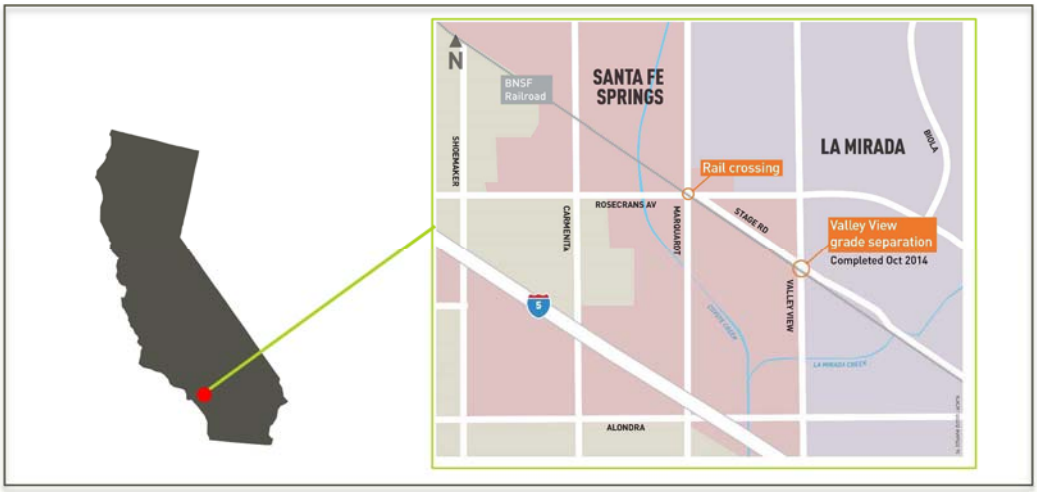
a) Construction of the corridor or usable segment thereof can be completed as proposed in the RM Funding Plan;
b) If so completed, the corridor or usable segment thereof would be suitable and ready for high-speed train operation;
c) Upon completion, one or more passenger service providers can begin using the tracks or stations for passenger train service;
d) The planned passenger train service to be provided by the Authority, or pursuant to its authority, will not require an operating subsidy; and
e) An assessment of risk and the risk mitigation strategies proposed to be employed.

As an independent consultant, PFAL, and our team of sub-consultants, has a duty of care to California taxpayers to review the RM Funding Plan and to address the required indications listed above. In keeping with this responsibility, the analysis and conclusions in this Report are not prejudiced by any external interests; our conclusions are completely our own.

RM Funding Plan Review and Analysis

The RM Funding Plan pertains to the Rosecrans/Marquardt Grade Separation Project ("RM Grade Separation Project"), located in Santa Fe Springs, California as seen in Figure 1.

Figure 1: RM Grade Separation Project Location (source: Rosecrans/Marquardt Grade Separation Project Community Open House Meeting, March 1, 2016)



The intersection of Rosecrans and Marquardt Avenues is currently an at-grade rail crossing on the Los Angeles to Anaheim corridor. The RM Grade Separation Project is intended to provide a new vehicle overpass at the intersection of Rosecrans and Marquardt Avenues to enable automobile traffic to travel over the rail corridor and provide unencumbered operations to the current passenger rail, current freight rail, and planned future high-speed rail operations. A more detailed project description is provided in Section 1.2.

The RM Funding Plan which is the subject of this report was developed by the Authority to satisfy the statutory requirements of SHC 2704.08(d)(1), comply with the appropriations in SB 1029, and fulfill the Authority's implementation plan as specified in the 2016 Business Plan. We summarize the Authority's positions described in the RM Funding Plan in Table 1.

Table 1: RM Grade Separation Funding Plan Summary

	SHC 2704.08(d)(1) requirements	RM Funding Plan Summary
a)	Identification of the corridor or usable segment thereof, and the estimated full cost of constructing the corridor or usable segment thereof	The RM Grade Separation Project is situated on the Los Angeles to Anaheim Segment, which is defined as the Usable Segment in the RM Funding Plan. The Authority has identified the Los Angeles to Anaheim Segment as the defined Usable Segment and the RM Grade Separation as the focus of the RM Funding Plan reviewed by PFAL for this Report.
b)	Identification of the sources of all funds to be used and anticipated time of receipt thereof based on offered commitments by private parties, and authorizations, allocations, or other assurances received from governmental agencies	There are currently seven funding sources for the $155.3 million RM Grade Separation Project listed along with their anticipated time of receipt.
c)	Projected ridership and operating revenue report	The RM Funding Plan provides details of historical ridership for Metrolink and Amtrak service as well as description of the Authority's need to connect the Los Angeles to Anaheim segment to the Phase 1 System before high-speed train operations can begin as envisioned in the 2016 Business Plan's ridership and revenue forecasts.
d)	Construction cost projection including estimates of cost escalation during construction and appropriate reserves for contingencies	The total RM Grade Separation Project cost is estimated at $155.3 million, which includes a 20% construction contingency and a 10% unallocated contingency based on the 65% design level.
e)	A report describing any material changes from the plan submitted pursuant to subdivision (c) for this corridor or usable segment thereof	The Legislature made its appropriation of Prop 1A funds in SB 1029 without a SHC 2704.04(c) plan, thus there are no material changes to describe.
f)	A description of the terms and conditions associated with any agreement proposed to be entered into by the Authority and any other party for the construction or operation of passenger train service along the corridor or usable segment thereof	Summaries of the Southern California MOU, and desired terms for the Project Management and Funding Agreement ("PMFA") and draft Construction and Maintenance Agreements are provided. Key funding source agreements and terms are described in Appendix A of the RM Funding Plan.

Besides the information included in the RM Funding Plan itself, PFAL requested, received, and reviewed a variety of additional documents and pieces of information including the 65% project design, specifications, project schedule, environmental documents, funding schedule, summary agreements, and risk assessment and register. Those documents were used in our analysis to form the conclusions described in this Report.

PFAL's review of the provided documentation and development of this Report, as it pertains to reviewing the RM Funding Plan against SHC 2704.08(d)(2), is limited in scope to the contents of the RM Funding Plan (and associated background information). Our role in preparing this Report is not to review the RM Funding Plan against SHC 2704.08(c) funding plans or the projects required to complete the overall high-speed rail system outlined in the 2016 Business Plan that were not included in the RM Funding Plan. This means:

- PFAL reviewed only the content of the RM Funding Plan, which that relates only to the RM Grade Separation Project and the ability of a high-speed train and associated electrification infrastructure (e.g., catenary) to fit within the envelope to be created under the RM Grade Separation Project. No other review or analysis of the Los Angeles to Anaheim segment (on which the RM Grade Separation Project is located) has been performed for the purposes of this Report.
- PFAL did not review the potential costs of the planned investments in the Los Angeles to Anaheim segment by the Authority such as the procurement of high-speed trainsets, electrification, signaling, or other capital projects required to connect the Los Angeles to Anaheim segment to the high-speed rail system because they are not included in the RM Funding Plan.
- Similarly, at the direction of the Authority, PFAL has not reviewed the projected high-speed rail revenues nor high-speed rail operations and maintenance cost implications for the Los Angeles to Anaheim segment as a stand-alone segment to form a view on potential operating subsidies in the future for high-speed rail operations because the Authority does not plan to run service in this corridor until it is connected to the rest of the high-speed rail system. However, PFAL has been tasked to review the projected Phase 1 revenues and operations and maintenance cost in a subsequent task order. Those conclusions will be summarized in a separate report to the Authority.

The approach PFAL implemented, further described in Section 1.1, to independently assess the criteria in SHC 2704.08(d)(2) is based on industry best practices, PFAL's previous roles of comparable assignments as independent financial advisor for the Federal Railroad Administration's Railroad Rehabilitation & Improvement Financing ("RRIF") program, the US Department of Transportation ("USDOT") and the USDOT's Transportation Infrastructure Finance and Innovation Act ("TIFIA") Program, as well as many other government agencies in the US and internationally.

The analysis and conclusions provided in this Report are based on our review of materials provided by the Authority. Our analysis and conclusions are based on our professional opinions and the opinions of sub-consultants to PFAL that specialize in passenger rail engineering and construction and complex transportation project

delivery. These subconsultants include David Evans and Associates, Inc., The Elliott Consulting Group, and Anrab Associates.

Key Identified Risk Areas

This Report is based on the 65% level design documents made available to PFAL by the Authority during the course of PFAL's engagement for the review of the RM Funding Plan. Although we found the RM Grade Separation Project's 65% design, schedule and cost estimate generally follow best practices for a 65% design level, there are risk areas associated with ongoing planning of the project that can affect the outcome of the RM Grade Separation Project and the conclusions of this Report. These risk areas are detailed in Sections 2 and 6 and are summarized below:

Risk Areas & Mitigation:

- **Funding Risk Area:** Currently six of the seven funding sources which have been identified for the RM Grade Separation Project still require additional approval or finalized funding. The various approval stages required for roughly 80% of the RM Grade Separation Project funding introduces risks to the timing and certainty of the Project's sources of funds.

  Mitigation: Metro, the Authority, Caltrans, and/or the City of Santa Fe Springs are working to secure the necessary approvals for the remaining funds. At a 65% design level, it can be expected all funding sources are not committed. Viewed at a programmatic level, there is the ability to shift the sources and uses to match the evolving nature of the project. The Authority's proposed Project Management and Funding Agreement ("PFMA") includes mitigation measures to protect Prop 1A funds encumbered prior to construction in the event that funding sources are not secured for construction, but a decrease in project funding will require additional State or Federal[1] funds which could delay or jeopardize Metro's ability to fully fund the Project. Contingencies currently included in the budget should be sufficient for reasonable funding delays, but would not be sufficient if one or more sources is not secured.

- **Project Agreement Risk Area**: The PMFA and Construction and Maintenance Agreement ("C&M Agreement") are under negotiation, which are the main vehicles to protect the Authority's interest and deployment of

[1] Article V, Section 8 of the Draft Construction Agreement states Metro and BNSF are not responsible for costs above the stated project costs and will seek State and federal funds to pay for excess project costs.

Prop 1A funds. This report is based on the Outline of Desired Terms provided by the Authority on March 23, 2017, but these terms and conditions may change in the final agreement. Any deviations from the Outlines of Desired Terms and the final agreements will change the analysis and conclusions of this Report.

Mitigation: The Authority is working to negotiate and finalize the PMFA as well as link the PMFA to the final version of the C&M Agreement.

- **Guarantee of Operations Risk Area**: Despite contributing $76.665 million towards the RM Grade Separation Project, the Authority does not have an agreement to enable and guarantee high-speed rail operations through the project site, which is owned by BNSF. The necessary steps to guarantee operations in the corridor are under development by the Authority, but were not in place before the completion of this Report.

  Mitigation: The Authority provided a draft implementation approach dated February 1, 2017 demonstrating their plan to secure operations in the corridor. The approach includes completing environmental clearances, developing passenger rail and freight rail capacity analysis with stakeholders, developing a shared corridor operating plan with stakeholders, and agreeing to a common approach to signaling and communications with the multiple operators in the corridor.

- **Project Development Risk Area:** The RM Grade Separation Project is currently at 65% project design and will advance to a 100% project design following this Report. Our findings are based on the 65% project level design, which inherently is not complete and requires additional project development. Our review has determined the 65% project level development meets industry standards for design, cost estimation, and schedule for a design-bid-build ("DBB") procurement with the expectation of comprehensive development of the project management plan and risk management plan. PFAL noted the 65% level design incorporated the January 11, 2017 Geotechnical Report from Earth Mechanics, Inc. which included eleven borings, but existing buildings prevented access to a small portion of the RM Grade Separation Project site for further geotechnical investigation.

  Mitigation: Metro reported three additional borings will be performed and incorporated into the final design once the right-of-way access is available to identify any unknown underground conditions at the southwest corner of the RM Grade Separation Project site. The range of risk is currently captured in Metro's risk register for identification of utility relocations (fiber optics, oil line, communication, gas, and overhead electric) and the three additional borings. PFAL also noted the project management plan and risk management plan

are under development by Metro as the RM Grade Separation Project advances.

Key Review Findings

The RM Funding Plan sets out to satisfy SHC 2704.08(d) for the commitment of $76.665 million of Prop 1A bond proceeds appropriated in SB 1029 to be used as a source of funding for the RM Grade Separation Project. The RM Funding Plan addresses each of the SHC 2704.08(d)(2) criteria. Table 2 summarizes PFAL's independent review of each component of SHC 2704.08(d)(2).

Table 2: PFAL Summary Findings for SCH 2704.08(d)(2)

	SHC 2704.08(d)(2) requirements	Review Findings
a)	Construction of the corridor or usable segment thereof can be completed as proposed in the plan submitted pursuant to the RM Funding Plan	Our team has reviewed the documentation provided by the Authority in relation to the RM Grade Separation Project and concludes that that the RM Grade Separation Project, at the 65% project design level, meets industry standards for design, cost estimation, and schedule for a DBB procurement. Notable exceptions to this are a more developed project management plan and risk management plan, which is currently under development by Metro. It therefore can be reasonably concluded given the 20% construction contingency and 10% unallocated contingency and seven years of schedule float between the proposed RM Grade Separation Project completion date in 2022 and when the Authority plans to use the corridor in 2029, the RM Grade Separation Project could be completed as proposed in the RM Funding Plan. This conclusion is based on the 65% project design documents and subject to implementation of the environmental clearances and development of project management documents. *See Section 2 for additional information.*
b)	If so completed, the corridor or usable segment thereof would be suitable and ready for high-speed train operation	The documents PFAL reviewed support the view that the RM Grade Separation Project is suitable and ready, as defined in AB 1889. The RM Grade Separation Project will generate near-term benefit for passenger rail providers. It can also accommodate subsequent additional high-speed train capital improvement investments such as electrification, because the horizontal and vertical clearances under the RM Grade Separation Project are adequate for the planned speeds. *See Section 3 for additional information.*

	SHC 2704.08(d)(2) requirements	Review Findings
c)	Upon completion, one or more passenger service providers can begin using the tracks or stations for passenger train service	The RM Grade Separation Project will allow existing passenger service providers to operate during construction and following completion of the RM Grade Separation Project. *See Section 4 for additional information.*
d)	The planned passenger train service to be provided by the Authority, or pursuant to its authority, will not require an operating subsidy	No high-speed rail service is contemplated as part of the RM Grade Separation scope until the Los Angeles to Anaheim corridor is connected to the rest of the Phase 1 system. *See Section 5 for additional information.*
e)	An assessment of risk and the risk mitigation strategies proposed to be employed	Risks and risk mitigations were reviewed by risks to Metro and risks to the Authority as a funding partner. Though many of the RM Project Risks were identified by either Metro or the Authority, PFAL found: • Metro has developed a preliminary risk register and risk management plan that will need to be updated as the RM Grade Separation Project design advances to ensure proper contingency levels are set and appropriate project controls are established and implemented. • To mitigate the risks to Prop 1A funds, the Authority needs to execute the PMFA according to the proposed Terms and Conditions Memo to protect the use and potential repayment of Prop 1A Funds. *See Section 6 for additional information.*

1. RM Funding Plan Overview

1.1 PFAL REVIEW APPROACH & METHODOLOGY

At the direction of the Authority, PFAL initiated a review of the RM Funding Plan in accordance with a scope that aligns with the requirements of SHC 2704.08(d)(2) on December 21, 2016.

The RM Funding Plan was under development during the review process, and drafts of the RM Funding Plan were provided to PFAL on January 25, 2017, April 11, 2017, May 1, 2017, May 22, 2017 and a final draft provided May 31, 2017.

To verify the underlying assumptions and documents relied upon by the Authority to develop the RM Funding Plan, PFAL and its sub-consultants undertook an iterative process to pose questions and requests for clarification to the Authority with the Authority providing additional supporting information as needed.

To facilitate the review process, document and question requests were categorized by:

- Civil Works
- Capital Costs
- Construction Schedule
- Environmental
- Project Management
- Risk Management
- Legislation/Project Agreements
- Funding

The additional information requests included:

- Cost estimates
- Preliminary design and specifications
- Alternative Development Report
- Environmental permits and documentation
- RM Funding Plan sources and uses schedule
- Southern California Memorandum of Understanding
- Description and status of Authority Agreements with Metro
- Description of relevant LA Metro RM Grade Separation Project Agreements
- Third party agreements
- Real Estate Management Plan
- RM Grade Separation Project Management team and plan

- Risk report
- Description of the Authority and Metro PMFA (including oversight and review of the RM Grade Separation Project)

The information was provided to PFAL by the Authority as it became available. As a result, the information requests were met at various stages of the review. PFAL, and its sub-consultants, reviewed the material provided through the iterative information request described above for completeness, reasonableness based on industry experience, and conformance with industry best practices. If any additional clarification was required or risk areas identified, PFAL and their sub-consultants developed a register of questions to the Authority to seek explanation and clarification.

To expedite the process of clarifying open issues, PFAL and the Authority conducted two general funding plan meetings for PFAL to clarify open questions. The nature of the meetings was to facilitate the understanding of the RM Funding Plan in a factual manner that would aid PFAL's analysis and understanding.

Once the majority of supplemental information was provided and the draft RM Funding Plans were reviewed, the PFAL team, the Authority and Metro conducted a teleconference on May 9, 2017 to provide the Authority and Metro an opportunity to clarify potential risks areas identified by PFAL. The issues, resolutions and outcomes of the teleconference calls are incorporated into this Report.

The review of the documents and conversations as outlined above were limited to the scope of the RM Funding Plan for the purpose of this Report. PFAL's scope of work was to review the content of the RM Funding Plan and the RM Grade Separation Project's supporting documentation and information.

PFAL's independent report is structured to address the requirements of SHC 2704.08(d)(2) as set out in Table 3 below.

Table 3: Report Structure to Address the Requirements of SHC 2704.08(d)(2)

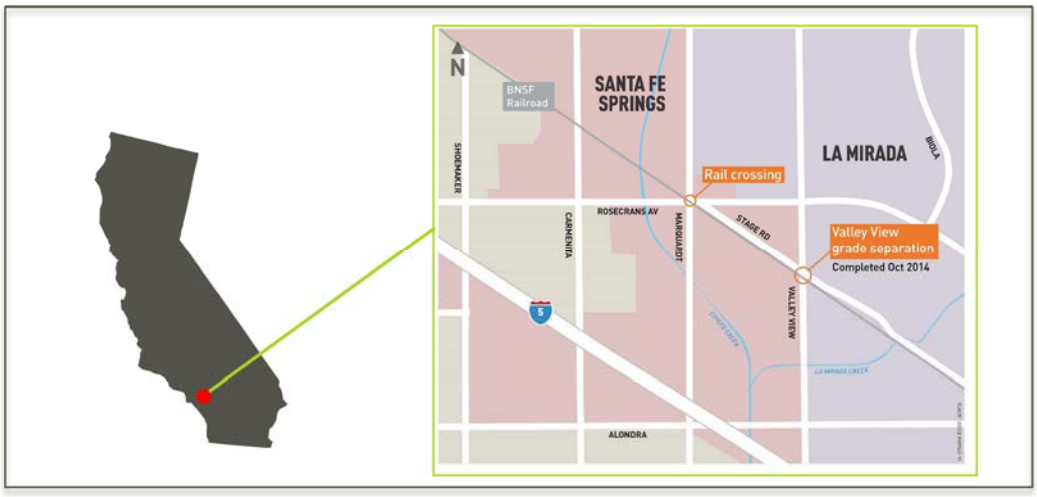
Report Section	Approach
Section 2	Addresses requirements of SHC 2704.08(d)(2)(a) by reviewing the constructability of the RM Funding Plan by determining the reasonableness of the following items (separately and then in aggregate): • procurement method • construction schedule • project management • project cost • funding

Section 3	Addresses requirements of SHC 2704.08(d)(2)(b). by reviewing the RM Grade Separation Project's ability to function as a foundation for HSR in the future while providing near-term benefit to other passenger rail services.
Section 4	Addresses requirements of SHC 2704.08(d)(2)(c) by reviewing the ability of passenger service providers to operate in the corridor after completion of the RM Grade Separation Project.
Section 5	Addresses requirements of SHC 2704.08(d)(2)(d). Because no stand alone high-speed rail service is contemplated by the Authority on the usable segment in this RM Funding Plan, PFAL is not providing an operating subsidy opinion in this Report.
Section 6	Addresses SHC 2704.08(d)(2)(e) by reviewing Metro's and the Authority's risk management plans for the RM Grade Separation Project.

1.2 SUBJECT OF RM FUNDING PLAN

The RM Grade Separation Project is located in Santa Fe Springs, CA between Los Angeles Union Station and the Anaheim Regional Transportation Intermodal Center (Figure 2). The RM Grade Separation Project site is currently an at grade rail crossing at the intersection of Rosecrans Ave and Marquardt Ave. The railway corridor through the Rosecrans/Marquardt intersection is owned by BNSF and it serves approximately 60 freight trains and 52 passenger trains per day in addition to roughly 45,000 – 52,000 vehicles per day[2].

Figure 2: RM Project Location (source: Community Open House Meeting, March 1, 2016)



[2] Based on Los Angeles County Metropolitan Transportation Agency's January 18, 2017 Planning and Programming Committee Minutes - Attachment B and Metro's 2016 TIGER application.

The proposed RM Grade Separation Project is intended to result in a new vehicle offset overpass with connector roads that will allow automobile traffic to travel over the existing railway (Figure 3), which is expected to have safety and traffic flow improvements for both rail and vehicular traffic.

The overpass will raise Rosecrans Avenue over the existing railway and Marquardt Avenue. Marquardt Ave will no longer pass through the railway, and will go over the Rosecrans overpass via the connector roads (Figure 4). The completed RM Grade Separation Project will provide a grade separated crossing at the Rosecrans/Marquardt intersection. The project is currently at a 65% design which was completed in November 2016. The final 100% design is anticipated to be complete in February 2018. Metro is currently working to begin acquiring real estate for the Project and expects construction to begin the first quarter of 2020.

Figure 3: RM Grade Separation Project Rendering

Figure 4: RM Grade Separation Project Overpass with Connector Roads Plan View

Not included in the RM Grade Separation Project scope is the proposed Positive Train Control program, track improvements, electrification and other systems work or any other capital projects for high-speed train operations.

1.3 USE OF PROPOSITION 1A FUNDING

The 2016 Business Plan describes how the Authority intends to implement the Phase I system in Southern California, and advances the shared corridor approach from Los Angeles Union Station to Anaheim Regional Transportation Intermodal Center, which the Authority is designating as a usable segment as defined in Prop 1A. These funds were appropriated in SB 1029 as part of $500 million of Prop 1A proceeds for Southern California MOU project investments. AB 1889 further clarified the definition of suitable and ready for SB 1029 appropriations. Therefore, the Authority has determined that the use of $76.665 million Prop 1A funds as laid out in the RM Funding Plan for the RM Grade Separation Project is appropriate and considered in compliance with Prop 1A, the Southern California MOU, SB 1029 and AB 1889. Table 4 below shows the sources and uses of funds for the RM Grade Separation Project including the $76.665 million of Prop 1A proceeds.

Table 4: RM Grade Separation Project Sources and Uses of Funds by Fiscal Year ($ 000s)

Sources	Prior to FY16/17	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	Total
Prop 1A**	$ -	$ -	$18,693	$16,472	$20,000	$19,500	$2,000	**$76,665**
Measure R	$2,558	$4,500	$6,000	$4,442	$5,500	$3,500	$ -	**$26,500**
US DOT TIGER**	$ -	$ -	$ -	$5,000	$7,000	$3,000	$ -	**$15,000**
Section 190**	$ -	$ -	$7,500	$7,500	$ -	$ -	$ -	**$15,000**
NHFP/CFIP**	$ -	$ -	$135	$6,500	$1,500	$ -	$ -	**$8,135**
ITIP**	$ -	$ -	$ -	$ -	$ -	$5,000	$2,000	**$7,000**
BNSF**	$ -	$ -	$ -	$ -	$7,000	$ -	$ -	**$7,000**
Total	**$2,558**	**$4,500**	**$32,328**	**$39,914**	**$41,000**	**$31,000**	**$4,000**	**$155,300**
Uses	**Prior to FY16/17**	**FY16/17**	**FY17/18**	**FY18/19**	**FY19/20**	**FY20/21**	**FY21/22**	**Total**
Project Approval / Environmental Document	$750	$925	$295	$ -	$ -	$ -	$ -	**$1,970**
Plans, Specifications and Estimates	$1,754	$1,325	$921	$360	$ -	$ -	$ -	**$4,360**
Right of Way	$54	$2,250	$31,112	$31,669	$ -	$ -	$ -	**$65,085**
Construction	$ -	$ -	$ -	$7,885	$41,000	$31,000	$4,000	**$83,885**
Total	**$2,558**	**$4,500**	**$32,328**	**$39,914**	**$41,000**	**$31,000**	**$4,000**	**$155,300**

Notes:

1. These numbers are indicative, and may change depending on demand given there are not yearly maximum or minimum dollar thresholds set by the PMFA
2. Amounts shown in categories for uses of funds include professional services, contingency, and escalation.
3. ** Indicates that there are steps that remain to be completed to gain access to the funding source. Remaining approvals for project funding is further discussed in Section 2.8.
4. Source: Los Angeles County Metropolitan Transportation Agency. Rosecrans Marquardt Grade Separation Project Budget Cash Flow. May 22, 2017.

The discussion below focuses on the limits on the use of Prop 1A funds for the RM Grade Separation Project, additional information on the other sources of funds is in Section 2.8.

The requested $76.665 Prop 1A amount represents 50% of the $153.33 million eligible project costs that the Authority has determined are appropriate for funding (plans, specification, estimates; right-of-way; and construction) based on the 65% design cost estimate, which excludes $1.97 million of costs Metro has included that are not related to construction. As shown in Table 5, Prop 1A funds are anticipated to not exceed 50% of the eligible costs spent to date at any point in the project.

Table 5: Percentage of Prop 1A dollars Compared to Eligible Costs Spent to Date

	Prior to FY16/17	FY16/17	FY17/18	FY18/19	FY19/20	FY20/21	FY21/22	Total
Prop 1A**	$ -	$ -	$18,693	$16,472	$20,000	$19,500	$2,000	**$76,665**
Eligible Costs	$1,808	$3,575	$32,033	$39,914	$41,000	$31,000	$4,000	**$153,330**
% of Prop 1A of Eligible Costs to Date	**0%**	**0%**	**49.96%**	**45.47%**	**46.62%**	**50.00%**	**50.00%**	**50.00%**

Though the maximum percentage of Prop 1A proceeds is capped by SHC 2704.08(a) at 50% of "total cost of construction", the maximum dollar amount is not. Therefore, the Authority, as required in SB 1029, is negotiating a Project Management and Funding Agreement ("PMFA") between Metro and the Authority to cap Prop 1A funding at $76.665 million. The PMFA Outline of Desired Basic Terms and Conditions restricts the use of Prop 1A funds to acquisition of land (pre-construction rights-of-way), construction, and construction-supporting items. It is possible, and contemplated by the Authority, that the use of Prop 1A funds for right-of-way may be encumbered prior to federal project level environmental clearances that are necessary before certain federal funds will be fully committed for expenditure.

The PMFA Outline of Desired Basic Terms and Conditions restricts use of Prop 1A funds being encumbered for construction until all other funds are fully committed. The Authority believes that this ensures that funds to that point are only spent on acquiring right-of-way that could be sold for market value, allowing Prop 1A funds to be recouped, should issues arise in finalizing the remaining funding commitments. While this is a reasonable approach, PFAL does not offer an opinion on the market value of the real estate being acquired nor its potential resale value.

PFAL interprets fully committed funding to indicate the funding sources have necessary board level approvals and executed funding agreements. As a result of the other funding source requirements (further described in Section 2.8), it is anticipated Prop 1A proceeds will not be used for construction-related costs until the RM Grade Separation Project obtains:

- NEPA clearance (a requirement of the TIGER funding agreement)
- Execution of the C&M Agreement (required for BNSF contributions)
- Approval of the Section 190 funding
- FHWA approval for the NHFP/CFIP funding
- CTC approval of the ITIP and NHFP/CFIP funding.

Metro and the Authority anticipate all other funding sources will be fully committed in 2018, ahead of the anticipated use of Prop 1A proceeds for construction activities.

2. Constructability

2.1 OVERVIEW

The PFAL team has completed a review of all requested documentation in relation to the 65% design level RM Grade Separation Project. In reviewing the constructability of the RM Grade Separation Project, the following key points were noted in our review of the RM Grade Separation Project documents:

- **Procurement Method:** The design-bid-build ("DBB") procurement method selected by Metro is a reasonable approach for delivering the RM Grade Separation Project given the design approvals required by BNSF. The DBB procurement approach places the onus on Metro for effective management of the RM Grade Separation Project. Effective project management depends as much on project leadership as it does on project management procedures. PFAL would expect that Metro assign a project manager with experience in managing in a multi-agency and private sector environment.
- **High Speed Rail Delivery Timeline:** High-speed rail service is expected to begin on the corridor in 2029. The RM Grade Separation Project, according to the Metro's 65% project design schedule, is planned to be completed in 2022, resulting in seven years of schedule float. With the exception of unlikely, extensive un-anticipated delays, we view the RM Grade Separation Project as highly likely to be delivered in time to enable high-speed rail operations. Furthermore, the 30% program contingency reported by Metro will help to mitigate any unplanned schedule delay costs.
- **Project Management Plan:** PFAL found the project management plan is largely focused on the design and engineering activities being undertaken by Biggs Cardosa Associates, Inc. and, as such, require further development for delivery of the RM project. However, it is common and expected these documents will advance as the project progresses. Metro has indicated that it will fully develop its project management plan that addresses items such as:
    - Metro's own organization to deliver the project
    - Project schedule
    - Cost management
    - The management of the procurement process
    - Contract management
    - Inter-agency coordination and the decision making process to avoid schedule delays and associated cost increases
    - Risk management

  - Community relations during construction
  - Project reporting

- **Geotechnical Investigations:** The geotechnical report for the 65% design is based on eleven borings from the January 11, 2017 Geotechnical Report by Earth Mechanics Inc. Metro reported that three additional borings will be incorporated into future designs once the right-of-way access is available to identify any unknown underground conditions at the southwest corner of the RM Grade Separation Project site. The range of risk is currently captured in Metro's risk register for identification of utility relocations (fiber optics, oil line, communications, gas, and overhead electric) and the three additional borings. PFAL was unable to verify a hazardous materials investigation was performed for the RM Grade Separation Project site.
- **Risk Identification and Quantification:** Risk mitigation strategies were identified to achieve a successful and on budget delivery, but will require further development, pro-active execution of the risk management plan, and a more comprehensive project management plan to successfully implement the mitigation strategies. As the risks register advances, PFAL expects Metro's risk quantification will be advanced and tied back to the RM Grade Separation Project's budget contingency.
- **Budget Contingency:** The quantification of the budget contingency at this stage appears to be based standard project practice on an allocated and un-allocated basis. PFAL would typically expect various project cost elements to vary as the project becomes more defined while contingency decreases as the design and construction issues are further developed and risks more completely defined. At the current 65% project design level a 20% construction contingency and 10% unallocated contingency is reasonable.
- **Delivery Cost Estimate:** We consider the cost estimate for the RM Grade Separation Project, including the unallocated contingency allowances to be sufficient given the application of the 20% construction and 10% unallocated contingency.
- **Funding:** Six of the seven RM Grade Separation Project funding sources still require additional approvals, which introduces additional risk to the timing of funds and certainty of complete project funding. Metro, the Authority, Caltrans, and/or the City of Santa Fe Springs are working to secure the necessary approvals for the remaining funds prior to construction activities.

This constructability evaluation of the RM Funding Plan only relates to the civil engineering and construction related elements of the RM Grade Separation Project. No evaluation of the constructability of the Los Angeles to Anaheim Segment was conducted at this time. Nor were track and systems such as signals, power and communications evaluated in this review as they are not included in the RM Grade Separation Project and RM Funding Plan.

Conclusion

Our review indicates that the RM Grade Separation Project appears to meet industry standards for a 65% design, cost estimation, and schedule for a design-bid-build procurement with the exception of hazardous material investigation, Real Estate Acquisition Plan, and development of the project management and risk management plans; all of which Metro is currently addressing for the next design stage. It therefore can be reasonably concluded at the 65% design level, a 20% construction cost contingency and 10% unallocated contingency that Metro reports it will continue to carry through final design, along with seven years of schedule float between the proposed RM Grade Separation Project completion date in 2022 and when the Authority plans to use the corridor in 2029, the RM Grade Separation Project can be completed as proposed in the RM Funding Plan. More confidence is expected to be gained as the design advances to the 100% design level and all project management documents become fully developed, but at the 65% design level there does not appear to be any “show stoppers” for the construction of this project given the points raised above and further detailed in the following sections.

2.2 PROCUREMENT

PFAL reviewed the procurement methodology to evaluate the applicability of the delivery method for the project to meet the intended schedule and budget. PFAL reviewed the RM Grade Separation Project 65% specifications developed by Biggs Cardosa Associates, Inc. dated November 18, 2016, Metro’s Project Delivery Selection Quick Reference Guide, and the RM Grade Separation Project schedule dated May 2, 2017 and confirmed the documents, construction advertisement milestone dates and proposed 100% design are in line with the proposed DBB procurement method.

The DBB procurement was chosen by Metro to reduce risks associated with the limited space available on the project site, the need for design agreements with multiple stakeholders, and BNSF requirement for design review as owner of the corridor. The decision to go with a DBB was further based on Metro’s Project Delivery Selection Procedure that is based on size, schedule, stakeholders, right-of-way, permits, contract type, risk, Metro resources and environmental permitting. For those reasons, PFAL team views the DBB approach as adequate and appropriate to deliver the RM Grade Separation Project.

The 65% specifications developed by Biggs Cardosa and Associates, Inc. dated November 18, 2016 are typical of 65% design level and include the majority of key items expected in a DBB specification, though some contractual terms such as insurance requirements are not yet defined. The undefined terms such as insurance

requirements will be defined as the RM Grade Separation Project advances to 100% design.

Though PFAL did not receive the requested past audits findings in time for this report, Metro's past experience and the requirements of the $15 million TIGER grant funding to follow procurement best practices should indicate Metro's ability to deliver the RM Grade Separation Project as a DBB assuming a project manager with experience managing multi-agency and private sector stakeholders is appointed.

2.3 SCHEDULE

The RM Grade Separation Project summary level schedule dated May 2, 2017 was provided for review and analysis. PFAL's review of the 65% design level summary schedule indicated the schedule effectively identifies critical path items based off the schedule's logic, sequence and activities. Our assessment is that project completion is highly likely to be achieved prior to high-speed rail operations in 2029 based on the planned schedule.

The RM Grade Separation Project completion date of 2022 has significant schedule float with respect to the commencement for high-speed rail operations in 2029. Therefore, schedule delay risk is unlikely to be significant concern. Schedule delay costs is the larger risk factor, not timing, for constructability of the RM Grade Separation Project. Costs associated with schedule delays can affect the overall project and should fully be quantified and mitigated in the project risk register. Utilities design and relocation activities, federal environmental clearance (a Finding of No Significant Impact is targeted by Metro) necessary for federal funding, right-of-way, and remaining negotiations of third party agreements are the relevant schedule drivers at the 65% design level. These factors are identified in the risk register but not quantified for their potential impact to the project cost. Upfront project delays such as federal environmental clearance and right-of-way acquisition can generate the highest cost impact. Best practice would dictate that Metro quantify the potential project delay costs in the risk register to gain greater confidence in the proposed cost contingency and escalation budget.

Based on reviewed information, we believe that management of the schedule risks such as utilities design and relocation activities, environmental clearance, right of way, and remaining negotiations of third party agreements for the RM Grade Separation Project as indicated within a fully developed risk management plan and register combined with the appropriate allocation of schedule float should support on time and within budget project performance. Best practice dictates that Metro should fully quantify schedule delay related costs, and confirm that adequate schedule contingency cost is allocated to the project, but an overall 30% contingency carried through final design should be reasonable to mitigate the schedule risk related cost.

2.4 PROJECT MANAGEMENT

The PFAL team reviewed the Final Project Management Plan ("PMP") for the RM Grade Separation Project dated February 6, 2016, Risk Management Plan dated October 20, 2016, Risk Register dated May 15, 2017, Draft Construction & Management Agreement dated March 17, 2017, and the PMFA Outline of Desired Basic Terms and Conditions dated March 23, 2017. In general, PFAL found the project management documents focused on the design and engineering activities currently underway and lagged in project delivery. However, it is expected these documents will advance as the project design progresses. Because the PMP will evolve as the RM Grade Separation Project develops, it should be considered a living document and not be considered final until the project nears completion. PFAL concludes that the following expected enhancement by Metro of theses project management documents can lead to successful completion of the RM Grade Separation project:

- Though some project organization information was provided, identification of Metro's organization to deliver the project, showing the direct and indirect project reporting structure, should be developed
- Development of a "Safety and Security" section that should reference a stand-alone Safety and Security Management Plan ("SSMP")
- Project schedule management – PFAL found the schedule in the PMP did not match the stand-alone project schedule dated May 17, 2017 provided for review. The PMP should be updated when new schedules are developed
- Cost Management, including procedures for early identification
- Procurement process management
- Contract management and change order procedures
- Document control
- Third party agreements, inter-agency coordination and the decision-making process to avoid schedule delays and associated cost increases
- Risk management
- Quality Management, the PMP should include or reference detailed quality management plans, processes and procedures for both design and construction

The RM Grade Separation Project, as a TIGER project, will also be subject to the requirements and assessment by the FTA. Those requirements include quality, safety and security, third party agreements, oversight criteria and the use of project management industry best practices.

A risk management plan ("RMP") provided by Metro, dated October 20, 2016, is lean and generic as compared to the level of project development, and should be further enhanced. The risk register provided by Metro, dated May 15, 2017, does capture

significant risks. Right-of-way risk is appropriately identified as a very high-risk item and as such, the development of a Real Estate Acquisition Plan ("RAMP") would suffice as another prudent management activity.

Force Account planning will be especially critical in the areas of design and construction that encroaches or occurs within the BNSF envelopes. Because BNSF should already be actively involved with design development, it is recommended that a Force Account Plan ("FAP") be developed and implemented. The Draft C&M Agreement provided by Metro does include substantial agreement information between Metro and BNSF. It includes BNSF flagging costs on a daily basis which are folded into the structural costs of the project. Because details on how the BNSF forces total costs were generated, it appears unclear whether sufficient funds have been allocated for BNSF forces throughout the project duration. Furthermore, BNSF appears to defer all design risks to Metro, which can be acceptable if BNSF reviews the design documents and provides comments as contemplated in the draft C&M. Finally, BNSF administrative costs are not specified in the agreement, potential unknown costs should be captured and quantified in the risk register and Metro should validate that sufficient contingency is allocated in the project budget.

2.5 ENVIRONMENTAL CLEARANCE

State environmental clearance is complete for the RM Grade Separation Project, but federal environmental clearance is still necessary for final commitment of federal funds. Metro is currently in the Environmental Assessment ("EA") phase for federal environmental clearance and expects to receive the issuance of a federal Finding of No Significant Impact ("FONSI") in December 2017. The RMP currently identifies potentially significant cost impacts if federal environmental clearance is not obtained for federal funding. PFAL noted the current mitigation listed in the risk register is to obtain a Categorical Exclusion ("CE"), which should be updated to match the risks and potential impacts of the current environmental process of obtaining an EA as opposed to a CE.

However, any schedule delay impacts associated with federal environmental clearance for the RM Grade Separation Project should not affect the high-speed operations planned to commence in 2029. Metro has indicated they believe sufficient cost contingency is incorporated into the project plan to compensate for these environmental risks. Cost impacts such as those caused by environmental clearance delays can be substantial due to materials and labor escalation that must be carried for the full project cost over the delay duration. PFAL believe that the 30% total program contingency Metro reports to be carrying on this DBB project should be sufficient to cover additional costs.

2.6 DESIGN

The 65% design package provided included plans, profiles, specifications, and other relevant design documents. The design package is complete and comprehensive as compared to projects developed to a similar level. The following findings and risks are developed as part of the design review process to determine constructability of the RM Grade Separation Project.

The grade separation overpass does not meet final minimum vertical clearance of 27 feet for a new structure based on California High-Speed Train Project Design Criteria. It does meet minimum vertical clearance of 24 feet for an existing structure for V < 125 mph. The Construction and Maintenance Agreement between Metro and BNSF specifies the clearances that have been agreed upon by the two entities. PFAL has been advised the Authority reviewed the 65% design and confirmed the design variance to accommodate the specified lower clearance is acceptable and workable.

As the design advances, the design elements should be captured and updated in the RMP and risk register to fully quantify project costs. The 20% construction contingency combined with the 10% unallocated contingency that Metro reports will be allocated to the project subsequent to final designs is likely to be sufficient to cover the total costs. However, as the design advances and additional information is obtained, full quantification of design risk costs should be correlated to the amount of contingency to provide increased confidence in this conclusion.

2.7 CONSTRUCTION COST

A 65% cost estimate summary dated December 15, 2016 was provided for review and summarized in Table 6. The 65% cost estimate includes a $155.3 million cost estimate for the RM Grade Separation Project. The 65% level estimate is in the Standard Cost Category (“SCC”) format as typical for a 65% design level and appears reasonable provided that right-of-way, regulatory, utilities, and unforeseen site conditions risks are managed and reasonably mitigated. The 65% cost basis documentation dated January 4, 2017 provided by Metro provides a sound foundation and meets industry standards to estimate project costs on projects similar to the RM Grade Separation Project. Civil elements, utility relocation, demolition and right of way, and other components are captured in the cost basis. Many of the higher risk elements are incorporated into the risk register to support effective monitoring and mitigation.

Various cost items such as roadway, right of way, and others define a 20% construction contingency application with 10% unallocated contingency. These contingency levels should be adequate when combined an effective risk management process.

Table 6: RM Grade Separation 65% Cost Estimate

Item Description	RM Grade Separation Cost
Construction Costs (excluding construction contingency)	$46,245,436
Construction Contingency	$9,249,087
Metro Programs	$2,774,726
Soft Costs	$19,700,992
Unallocated Contingency	$7,798,000
Escalation	$10,764,670
ROW	$47,500,000
ROW Contingency	$11,307,835
Total	**$155,300,000**

Note: The cost estimate does not include any financing costs

2.8 PROJECT FUNDING

PFAL evaluated the availability of funds for the planning and construction as part of our analysis to determine the constructability of the RM Grade Separation Project. Metro's risk register ranked funding as the second highest risk to the RM Grade Separation Project, and PFAL concurs that this is a significant risk area.

Funding for the $155.3 million RM Grade Separation Project is a risk area due to the fact six of the seven identified funding sources require additional approval, finalized funding agreements or National Environmental Policy Act ("NEPA") clearance. At a 65% design level, it can be expected funds are not fully committed due to the programmatic nature of a 65% design level project. Due to the lack of committed funding, the timing and availability of the sources of funds is uncertain and may change as the project progresses. Therefore, PFAL considered the various approvals necessary for the funding sources, potential impact of a delay in funding, and potential impact of changes in the funding program for the RM Grade Separation Project.

Of the identified funding sources, only the $26.5 million Measure R funds are currently committed and available. Metro's Planning and Programming Committee approved the use of $35 million in Measure R funds towards BNSF grade separation

projects on September 18, 2013[3] and subsequently approved the $26.5 million in Measure R for the RM Grade Separation Project on January 18, 2017[4]. Of the remaining funding sources, the following agreements and requirements are under development by either Metro, the Authority, Caltrans or City of Santa Fe Springs:

- Prop 1A Bond Proceeds are subject to Authority Board approval of the RM Funding Plan, approval from the Department of Finance, and execution of the PMFA.
- The $15 million US Department of Transportation's ("US DOT") Transportation Investment Generating Economic Recovery ("TIGER") grant awarded in 2016 is still subject to NEPA clearance and finalizing grant agreement between Metro and the US DOT for the RM Grade Separation Project. NEPA clearance is expected in December 2017 and the finalized grant agreement is expected in 2018.
- NHFP/CFIP expected funding is dependent on completing the NHFP application (expected in the summer of 2017), approval by the FHWA of the State's application, followed by approval from the CTC to allocate the requested funds to the RM Grade Separation Project. NHFP/CFIP fund approval is anticipated in March 2018.
- ITIP expected funding requires the reprogramming of funds approved in the 2016 ITIP. CTC action is required to reprogram the funds and is expected in 2017.
- Section 190 requires the submission of an application led by City of Santa Fe Springs for the CTC to allocate the anticipated FY17/18 and FY18/19 Section 190 funds to the RM Grade Separation Project.
- BNSF's required funding contribution to be formalized in the Construction and Maintenance Agreements expected in summer of 2017. As noted in the RM Funding Plan, Metro will advance BNSF's share beyond the in-kind services and BNSF will repay Metro following completion of the of the RM Grade Separation Project according to Article V, Section 8(a) of the Draft C&M Agreement.

Due to the programmatic nature of a 65% design level project, it is likely the yearly cash flow presented in Table 4 will vary depending on actual project needs and funding requirements as the project advances into construction. PFAL noted the $7.5 million Section 190 funds programed for FY17/18 and FY18/19 will be an

[3] Los Angeles County Metropolitan Transportation Agency. Planning and Programming Committee Attachment B. September 18, 2013.
[4] Los Angeles County Metropolitan Transportation Agency. Planning and Programming Committee Attachment B. January 18, 2017.

unprecedented annual amount for Section 190 funds[5]. PFAL reviewed Section 190 annual fund recipient projects for the last 29 years, checked the status of the Section 190 funds with the CTC (the allocating body for those funds), and reviewed the relevant statute to determine if Section 190 funds could be made available as described in the RM Funding Plan. Though the RM Grade Separation is the highest ranked project and eligible for allocation up to $15 million in total, of the past three highest ranked projects, none has received more than $5 million per fiscal year. Of the remaining projects, only has received more than $5 million in one fiscal year. In any event, this Section 190 funds issue (i.e., whether only $5 million a year is allowed, or the $7.5 million the RM Funding Plan assumes) is only one of cash flow timing since the RM Grade Separation Project is eligible for $15 million. If the $15 million Section 190 funds are spread over three years instead of the assumed two years, other funding sources could be accelerated to compensate, as noted below.

Given the criticality funding required in FY18/19 to commence construction, PFAL contemplated two possible scenarios if eligible project costs increase despite cost mitigations developed by Metro (described in Section 2.7) or availability of funding is delayed in FY17/18 and FY18/19 based on precedent allocations of Section 190 funding.

If one or more project funding sources are delayed or reduced, the available sources of funds will need to be accelerated or spending pushed to later fiscal years. Since the PMFA Outline of Desired Basic Terms and Conditions does not specify limits of the total $76.665 million Prop 1A proceeds for right-of-way acquisition versus construction activities, it is possible more Prop 1A proceeds than outlined in Table 4 could be used for right-of-way acquisition (although the entire amount of Prop 1A funds would be capped at the $76.665 million total). Any acceleration of Prop 1A funds will be limited to the 50% restriction of project dollars spent at that point in time and early spending will only go toward right-of-way, which can be sold and funds recouped if the project does not go forward. In this scenario, other sources (such as Measure R) could also be accelerated to make up any funding delays.

As described in Section 6, Metro is developing a risk register and project management plan to ensure the project is delivered as proposed. In the unexpected event that costs exceed the proposed amounts, there currently are no plans to secure additional funding. Article V, Section 8(a) of the Draft C&M Agreement

[5] Caltrans Funding Allocations for Section 190 (source: http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/Rail/Rail_Crossings/Sec190Projects_201606.xls)

reiterates the need to pursue additional funding sources from the State, federal government or other sources, in the case of cost overruns beyond the project contingency but falls short of requiring Metro or BNSF to fund excess project costs over the current project cost estimate. Prop 1A funds will not be eligible to cover additional funding gaps due to the anticipated PMFA funding limit of $76.665 million and 50% restriction of project dollars spent. This highlights the need to execute the PMFA to protect the use of Prop 1A funds in the event of cost overruns, further addressed in Section 6.

3. Suitable and Ready for High-Speed Rail

As stated in Assembly AB ("AB") 1889, "Suitable and ready for high-speed train operation" means: "if the bond proceeds, as appropriated pursuant to Senate Bill 1029 of the 2011–12 Regular Session (Chapter 152 of the Statutes of 2012), are to be used for a capital cost for a project that would enable high-speed trains to operate immediately or after additional planned investments are made on the corridor or useable segment thereof and passenger train service providers will benefit from the project in the near-term."

The RM Funding Plan, the 65% design, 65% specifications, and associated documents provided by the Authority support the view the RM Grade Separation Project is suitable and ready as defined in AB 1889. The RM Grade Separation Project will generate near-term benefit for passenger rail providers, such as Metro and Amtrak, by improving safety and reducing rail and roadway delays. The RM Grade Separation Project can also accommodate high-speed train capital improvement investments such as electrification to enable for high-speed train operations planned to commence in 2029.

The Authority has reviewed and approved the RM Grade Separation's 65% design for vertical and horizontal clearances to accommodate planned investments by the Authority to provide High-Speed Train Operations. The March 23, 2017 PMFA Outline of Desired Basic Terms and Conditions further outlines Metro's obligation to certify the vertical and horizontal clearances for the RM Grade Separation Project through substantial completion based on the Authority's review of the 65% design. Though some risks are associated with the tighter clearances associated with the RM Grade Separation Project, the RM Grade Separation Project's clearances should provide sufficient clearance for the Authority's planned high-speed train operations.

The RM Grade Separation Project will provide the initial step for the Authority's planned investment in the corridor as outlined in the 2016 Business Plan. The RM Grade Separation Project alone is not sufficient for high-speed train operations, but it is an element of the Authority's development plan to provide high-speed train operations in the Los Angeles to Anaheim corridor. The planned investments, not addressed in this RM Funding Plan, required for high-speed train operations in the corridor include construction of electrification and systems for the Los Angeles to Anaheim corridor. Once the planned investments are completed, the Authority should be able to run high-speed trains under the RM Grade Separation. Because the RM Funding Plan only pertains to the RM Grade Separation Project and not the proposed high-speed train operations in the Los Angeles to Anaheim corridor, detailed operating schedules were not reviewed or contemplated. However, the Authority

plans to develop a detailed shared corridor operating plan as part of future operating agreements. This may also include a finalized approach for signaling and communications with the other passenger train and freight operators.

In the near-term, the RM Grade Separation Project can provide improved safety and service to Metro and Amtrak due to grade separating automobile traffic from passenger train operations.

This conclusion is based on the 65% design and specification provided to PFAL, and is subject to change depending on the final specifications and designs of the RM project, environmental clearance for the Phase 1 high-speed rail system, future design of high-speed rail elements and a finalized shared corridor operating plan.

4. Passenger Service Compatibility

Based on the material PFAL reviewed to confirm the vertical and horizontal clearances, there are no expected impediments to the current passenger train service provided by Metro and Amtrak along the corridor due to the RM Grade Separation Project upon completion of the project. Some interruptions may occur during construction, but those construction interruptions will be limited to the construction phase and mitigated by the proposed precast construction method.

5. Operating Subsidy

Any high-speed train service contemplated by the Authority is outside the scope of the RM Funding Plan. Section C of the RM Funding Plan indicates the Authority will not operate stand-alone High-Speed Train Service in the Los Angeles to Anaheim Corridor until the Phase 1 system, as defined in the Authority's 2016 Business Plan, is completed. The Authority estimates the Phase 1 system will be operational by 2029. This is also reflected in the Ridership and Revenue Forecasting Technical Supporting Document to the 2016 Business Plan which assumes High-Speed Train Service in the corridor after the Silicon Valley to Central Valley Line is completed and subsequently extended to Los Angeles and Anaheim as contemplated in the complete Phase 1 service.

Since no standalone Authority High-Speed Train Service will be provided in the corridor as defined in the RM Funding Plan, no operating subsidy is contemplated by the Authority associated with the RM Grade Separation Project. We understand that passenger rail service provided by Metro and Amtrak in the corridor will not result in any unreimbursed operating or maintenance cost to the Authority.

6. Risks and Risk Mitigation Strategies

The risks and risk mitigation strategies for the RM Grade Separation Project can be categorized by risks to Metro and risks to the State of California via Proposition 1A contributions. This section will provide an analysis of the risk mitigations proposed by Metro and the Authority to address the identified risks associated with the RM Grade Separation RM Funding Plan.

6.1 METRO RISKS AND RISK MITIGATION STRATEGIES

Metro's Risk Management plan is very general, providing a level of detail commensurate with a planning level of project development. The RMP should be further developed and detailed to address risk mitigation activities and responsibilities appropriate for entry to final design. An updated risk register was provided to PFAL on May 15, 2017 for review. Metro further detailed risk items to address specific design, construction, and agency agreement issues, as well as procurement-related risks. Although many of the major risks are captured, we would expect to see a much more comprehensive risk register that captures a wider spectrum or project risks that correlates to a 65% design level. Metro should quantify risk impacts and should reconcile them to equal a total potential amount substantially less than the 30% of total contingency amount that Metro reports will be allocated to the project at 100% design. The risk items identified in the RMP and risk register are expected to be adequate given updated and ongoing management by Metro.

Metro has identified the high-risk areas requiring additional attention through project completion. Included is cost management, schedule management, design management, right-of way management, procurement management, and regulatory management. Risk-informed contingency assessment has not been completed for the components of the project budget, such as real estate, construction management services, and schedule. It is anticipated that a streamlined version of the risk-based cost approach would be applied to all aspects of the RM Project and that the resulting contingency values would be presented in cost monitoring reports. This approach would facilitate a more robust contingency management and evaluation process that could inform more precise cost estimates.

If the risk-informed process is fully implemented, and if the risks are properly managed moving forward, we assess that the RM Project can be completed within project schedule and budget. Similar federally funded projects may undergo similar Risk Assessments that are typically more robust. It is good management practice to manage risks prudently on complex projects of all sizes. Assuming Metro allocated

30% contingency at 100% design as indicated, the project budget is likely to be adequate to cover the identified project risks. Proper documentation and analysis would however increase confidence. The 30% contingency amount reported by Metro at final design is substantially more than that typically allocated on similar projects. Most allocate between 5% and 10% construction contingency once final design is completed. With a similar amount allocated to soft costs, depending upon project complexity.

6.2 PROP 1A RISKS AND RISK MITIGATION

The main mitigation of risk to Prop 1A funds and the State is through the PMFA. The Authority is currently negotiating the final terms of the PMFA, thus this analysis is based on the March 23, 2017 Outline of Desired Basic Terms and Conditions. Key terms identified in the Outline of Desired Basic Terms and Conditions include:

- **Maximum dollar cap:** the PMFA will cap the maximum dollar amount. The March 23, 2017 terms state the maximum amount is $76.885 million, which matches the current RM Funding Plan requested amount.
- **Vertical and horizontal clearance certification:** The Authority has approved the 65% design vertical and horizontal clearances for planned investments in the corridor and future high-speed rail operations. The PFMA request Metro to certify at waypoints to ensure these clearances are maintained. The waypoints have not been enumerated in the Outline of Desired Basic Terms and Conditions, but will need to be specified in the final agreement.
- **No guaranteed right to operate in corridor or access for future high-speed rail capital improvements:** The PMFA is an agreement between the Authority and Metro, and does not include BNSF, the owner of the railway. The Authority plans to develop a detailed shared corridor operating plan as part of future operating agreements, including a finalized approach for signaling and communications with the other passenger train and freight operators, but no operating rights for the Authority in the railway at the RM Grade Separation Project site will be guaranteed. But, the RM Grade Separation Project will not impede the Authority's planned investments or operations in the corridor.
- **Dedicated use of Prop 1A Funds:** The PMFA indicates right-of-way and construction activities are the only acceptable use of Prop 1A funds. It does not restrict the amount of Prop 1A funds used for either item.
- **Risk mitigation for right-of-way Prop 1A proceeds in project default:** The PMFA Outline of Desired Basic Terms and Conditions will require Metro to sell land acquired for the project to pay back Prop 1A bond proceeds if the

project does not proceed. This is a worst-case scenario protection in the event the RM Grade Separation Project is unable to be completed.

- **Fair Market Value Resale of Real Property:** The PMFA Outline of Desired Basic Terms and Conditions states real property will be sold at market value, per the California Constitution, and proceeds used to repay the used Prop 1A funds to the Authority. Sale of real property in a distressed scenario or in a volatile market may mean that 100% of expended funds may not be recovered. As a result, there is a risk all Prop 1A funds may not be repaid depending on the market value of the property.
- **Risk mitigation for construction Prop 1A proceeds in project default:** The PMFA Outline of Desired Basic Terms and Conditions requires all funding sources be committed "in a manner that is reasonably certain" before any Prop 1A construction dollars are used for the RM Grade Separation Project. Though there is no repayment mechanism if Prop 1A construction dollars are used and the project is not completed, the requirement for all funding to be in place indicates all environmental clearances, final project funding agreements, and project agreements are in place as well as the 100% design and cost contingencies which further reduce the project risks.

PFAL noted the current version of the PMFA Outline of Desired Basic Terms and Conditions did not address the C&M Agreement, nor will the Authority be party to the Construction & Maintenance Agreement. The Authority indicated the two documents will be linked to provide assurances for the design certification and construction, but no further details were provided.

7. Conclusions

Having completed our independent review of the RM Funding Plan, PFAL's conclusions are as follows:

	SHC 2704.08(d)(2) requirements	Review Findings
a)	Construction of the corridor or usable segment thereof can be completed as proposed in the plan submitted pursuant to the RM Funding Plan	Our team has reviewed the documentation provided by the Authority in relation to the RM Grade Separation Project and concludes that that the RM Grade Separation Project, at the 65% project design level, meets industry standards for design, cost estimation, and schedule for a DBB procurement. Notable exceptions to this are a more developed project management plan and risk management plan, which is currently under development by Metro. It therefore can be reasonably concluded given the 20% construction contingency and 10% unallocated contingency and seven years of schedule float between the proposed RM Grade Separation Project completion date in 2022 and when the Authority plans to use the corridor in 2029, the RM Grade Separation Project could be completed as proposed in the RM Funding Plan. This conclusion is based on the 65% project design documents and subject to implementation of the environmental clearances and development of project management documents.
b)	If so completed, the corridor or usable segment thereof would be suitable and ready for high-speed train operation	The documents PFAL reviewed support the view that the RM Grade Separation Project is suitable and ready, as defined in AB 1889. The RM Grade Separation Project will generate near-term benefit for passenger rail providers. It can also accommodate subsequent additional high-speed train capital improvement investments such as electrification, because the horizontal and vertical clearances under the RM Grade Separation Project are adequate for the planned speeds.
c)	Upon completion, one or more passenger service providers can begin using the tracks or stations for passenger train service	The RM Grade Separation Project will allow existing passenger service providers to operate during construction and following completion of the RM Grade Separation Project.
d)	The planned passenger train service to be provided by the Authority, or pursuant to its	No high-speed rail service is contemplated as part of the RM Grade Separation scope until the Los Angeles to Anaheim corridor is connected to the rest of the Phase 1 system.

	SHC 2704.08(d)(2) requirements	Review Findings
	authority, will not require an operating subsidy	
e)	An assessment of risk and the risk mitigation strategies proposed to be employed	Risks and risk mitigations were reviewed by risks to Metro and risks to the Authority as a funding partner. Though many of the RM Project Risks were identified by either Metro or the Authority, PFAL found: • Metro has developed a preliminary risk register and risk management plan that will need to be updated as the RM Grade Separation Project design advances to ensure proper contingency levels are set and appropriate project controls are established and implemented. • To mitigate the risks to Prop 1A funds, the Authority needs to execute the PMFA according to the proposed Terms and Conditions Memo to protect the use and potential repayment of Prop 1A Funds.

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